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**Causal Beliefs and Treatment Preferences for the Symptoms of  
Depression among Chronically Ill African American, Latino, and White  
Patients.**

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**by**

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**Dissertation**

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

**Doctor of Philosophy**

**The University of Texas at Austin**

**May 2007**

## **Dedication**

I dedicate this dissertation to my grandmother, Ezella Noel, who always told me to keep on living; my husband, Morris Wilburn, for keeping a great sense of humor and being willing to do whatever it took to keep me going; my children, Anthony, Leelah, and Mo-Mo, for their continued patience and love for mommy throughout this process; Last, but definitely not least, I thank my Heavenly Father and Savior, Jesus Christ, for maintaining me physically, emotionally, and spiritually.

## **Acknowledgements**

First, I would like to thank my dissertation chair, Elizabeth Pomeroy, for her guidance, continued support, and encouragement throughout this process. I would like to thank my dissertation committee, Arthur J. Schwab, Ph.D., Namkee Choi, Ph.D., King Davis, Ph.D., and Alexandra Garcia, Ph.D. for their willingness to share their knowledge about the research process in which I gained immensely. I would also like to extend a special thanks to Arthur Whaley, Ph.D., Laurel Alexander, Ph.D., and Rowena Fong, Ed.D., for the time and great investment that they so willingly extended to me on this difficult journey of learning. I also wish to extend a special thanks to Dawn Fowler, Ph.D., for just keeping things real. Lastly, I would like to thank my classmates, Courtney Lynch, Kelly Gober, and Stephanie Rivaux; my friend, Kimberly Farris, Ph.D. and co-workers who all lent an ear and gave me needed support and advice but of whom most of all encouraged me to never QUIT

## **DON'T QUIT**

When things go wrong as they sometimes will,  
When the road you're trudging seems all uphill,  
When the funds are low and the debts are high,  
And you want to smile, but you have to sigh,  
When care is pressing you down a bit –  
Rest if you must, but don't you quit

Success is failure turned inside out,  
The silver tint of the clouds of doubt  
And you never can tell how close you are,  
It may be near when it seems afar,  
So stick to the fight when you're hardest hit –  
It's when things go wrong that you must not quit

- Anonymous

# **Causal Beliefs and Treatment Preferences for the Symptoms of Depression among Chronically Ill African American, Latino, and White Patients.**

Publication No. \_\_\_\_\_

La Tonya Mayon Noël, Ph.D.

The University of Texas at Austin, 2007

Supervisor: Elizabeth Pomeroy

The focus of the research study is to explore chronically ill African American, Latino, and White patients' causal attributions of symptoms of depression and factors that predict depression care treatment preferences among these groups. Research has demonstrated that perception of illness impacts what treatments a person will deem appropriate for their mental health problems and from whom they will seek treatment. Research also indicates that certain ethnic groups are more likely to seek treatment for their symptoms of depression in the primary care setting. Yet, it is unclear how they actually perceive their symptoms and what best predicts the treatments that they are likely to consider acceptable.

A convenient sample of 109 HIV+ adults, 79 diabetic adults, and 3 adults with both conditions were recruited for this study. Participants had to be receiving services for either HIV, diabetes, or both conditions in one of the three central Austin facilities and be a representative from one of three racial/ethnic groups: African Americans, Latino, and White.

Differences were found across ethnicity with regard to causal beliefs and treatment preferences for the symptoms of depression both among the HIV and the diabetic subgroups. Latinos in both groups were more likely than Whites to prefer counseling or a single form of treatment over combined treatment methods. Diabetic Latinos were more likely to prefer counseling for symptoms of depression. HIV seropositive individuals who reported the least

number of symptoms of physical illness were more likely to attribute their symptoms of depression to stressful life events, whereas those who reported the greatest number of symptoms of physical illness were more likely to attribute their symptoms of depression to their medical illness. Additionally among the HIV subgroup, individuals who reported high stress tended to predict the preferences for treatment provided by a psychiatrist/psychologist and Whites scored highest on this factor. Finally, differences in depression scores across race/ethnicity were also revealed.

The utility of assessing a patient's understanding of symptoms of depression in order to determine how personal illness models impact treatment preferences and knowledge of patient's causal attributions can aid medical social workers and physicians in collaborative management of chronic illness and depression are discussed.

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# **CHAPTER 1**

## **Introduction**

Depressive disorders are a significant factor in physical illness treatment and recovery and impact not only the individual suffer but also their families and society at large. The functional disability associated with the depression seems to play the largest role in the impact that the illness has on the individual and the larger community. Research indicates that individuals suffering with depression are likely to have more functional disability than individuals with chronic physical illnesses (Simon, Katon, Rutter, et al., 1998) and it has been estimated that by the year 2020, depression will be second only to heart disease as a source of global disease burden (Chapman, Perry, & Strine, 2005; Murray, & Lopez, 1998).

Major depression is differentiated from other psychological and physical illnesses based on a persistent disturbance in mood of at least two weeks that is usually accompanied by diminished interest in life, with significant impairment in the individual's social, occupational, and physical functioning. However, it is important to distinguish the full clinical syndrome of major depression from depressive symptoms, which may be more temporary or part of normal adjustment to changes in a persons life also known as adjustment disorder. Depression in general, describes a broad range of symptoms with variation in severity. Symptoms of depression may include feelings of helplessness, worthlessness, low self-esteem, guilt, and failure. Patients suffering from depression may also experience a loss of pleasure in things they normally would enjoy, withdraw from social situations and activities, and perceive life events as more negative than usual. Symptoms of depression in some patients also have physical effects on the individual. The patient suffering from depression may experience fatigue, energy loss,

weight gain or loss, sleep disruptions, and pain in the physical body. Recurrent thoughts of suicide and death may also accompany more severe forms of depression (Diagnostic and Statistical Manual, fifth edition: APA, 2001).

Research indicates that the majority of people with depression first present in the primary care setting (Goldman, Nielsen, & Champion, 1999; Vega et al., 1999). In addition, it has been found that depression is treated more often in the primary medical setting than in the specialty mental health setting (Wang, Berglund, & Kessler, 2000) and is one of the most common conditions among primary care patients (Lewis, 2001). This is especially true of depressed patients of color, who rarely seek treatment from the specialty mental health sector (Brown, Abe-Kim, & Barrio, 2003; Brown & Schulberg, 1998). Studies also show that 5% to 10% of all patients visiting their medical doctor for any reason have major depression (Katon, Von Korff, Lin et al., 1999; Katon & Ciechanowski, 2002), and up to 30% of all primary medical patients have symptoms of depression (Olfson, Marcus, Druss, Elinson, Tanielian, & Pincus, 2002).

Throughout this review of the literature, several descriptive words will be used. The first are the term recognition or detection of depressive symptoms. Throughout this review these terms will be used interchangeably and signify that the physician has accurately perceived the patient's symptoms are related to depression. The second term is assessment. In this review, assessment will refer to the process of evaluating a patient's current physical and/or mental capacity. The final term is diagnosis, which in this review will refer to identifying the nature or cause of a condition based on symptoms, signs, and differentiation. In addition, depression diagnosis should also include some form of a structured clinical interview or mental status examination.

With appropriate diagnosis and treatment, depressed patients can resume regular work duties, as well as social and leisure activities. However, many sufferers of depression often have other co-morbid conditions which tend to complicate the recognition of depression and treatment. According to Ormel et al. (1998) more than 21% of persons with major depression have co-occurring medical conditions. Since studies have consistently found an increased risk of depression disorders among chronically ill patients (Katon & Ciechanowski 2002; Katon, 2003), one would logically conclude that the presence of a chronic illness should increase suspicion for symptoms of depression. Yet, it has been consistently found that depression is more likely to go unrecognized in patients when chronic medical conditions are comorbid. In addition, patients with chronic medical conditions are also more likely to be non-adherent to treatment protocols when depression is present (Zung, Broadhead, & Roth, 1993). A majority of primary care physicians cite patient resistance to diagnosis and treatment of mental health disorders as an important obstacle to providing this care (Brody, Khaliq, & Thompson, 1997).

To better understand the cultural underpinnings of the acceptance and understanding of depression as a diagnosis, this exploratory study seeks to investigate how chronically ill African American, Latino, and White patients, between the ages of 18 and 64, attribute symptoms of depression. Throughout this study, the terms attributions and beliefs will be used simultaneously. For the purposes of this study, causal attribution or belief refers to the explanation that an individual gives for or perceives as causing their symptoms. In addition, a condition like depression has several viable treatment options that patient attitudes and preferences may have a large impact on adherence and subsequent recovery (Cooper-Patrick et al., 1997), for this reason, this study also seeks to ascertain patient treatment and provider preferences for symptoms of depression.

This study focuses on causal attributions of depression among the chronically ill because chronic physical illness and pain symptoms are the number one reason that primary care patients seek medical care (Bair, Robinson, Katon, & Kroenke, 2003). Research indicates that 7 out of 10 primary care visits are for concerns related to chronic physical illness (Veale, 2003). Chronic physical illness is a medical condition that has a slow progression and a long duration. Examples of chronic physical illness include diabetes, cancer, arthritis, congestive heart failure, hypertension, and chronic obstructive pulmonary disease (COPD). Recently, HIV/AIDS, bipolar disorder, schizophrenia, as well as depression have also been characterized as chronic illnesses (Oxman, Dietrich, Williams, & Kroenke, 2002). Depression often has a slow progression and if left untreated has the potential to be long lasting and can produce limitations in multiple domains of health related quality of life (HRQOL). In the acute phase, there may be improvements in multiple domains over a 6-9 month interval with appropriate treatment. In the continuation phase, there may be substantial risk of relapse if treatment is discontinued or if medication is not administered in an efficient dose. For many, depressive disorders also mimic chronic medical conditions in the sense that the condition often requires long term management due to substantial risk of recurring episodes (Oxman, Dietrich, Williams, & Kroenke, 2002).

Chronic physical illness is a multidimensional experience and a multilayered object of analysis. From the perspective of the sufferer, the illness can be felt in a number of ways including intrusive symptoms such as pain or nausea. Chronic conditions also have the ability to impact and disrupt daily physical and social routines (Kelly & Field, 1996). Some sufferers of chronic physical illness may also experience cognitive distortions and confusion. Behavior patterns of the sufferer may take on new and unfamiliar forms. Some chronic physical illnesses have less intrusive symptoms. Diabetics who experience long bouts of elevated blood sugars

may be destroying their kidneys but will remain asymptomatic for a period of time (Roberts, 2006); and cancer patients can have tumor growths for months, sometimes even years before they become aware of the malignancy (Terry, Sluss, Skates, Mok, Ye, Vitonis, & Cramer, 2004).

Chronic illness (depression included), requires considerable self-management by the sufferer. Self-management refers to (1) engaging in activities that promote health and prevent adverse outcomes; (2) interacting with health care providers and negotiating treatment regimens; (3) monitoring physical and emotional statuses and making appropriate illness management decisions on the basis of this self monitoring; and (4) managing the effects of illness on the ability to function in important roles and on emotions, self-esteem, and relationships with others (Brown, et al., 2001; Katon, et al., 1997; Long, 1996). Research suggests that patients who are actively involved in their management of their condition and take their medication or attend behavioral health sessions as they are prescribed have fewer symptoms and improved functioning compared to those who do not (Von Korff, Gurman, Schaefer, Curry, & Wagner, 1997). However, the research is scarce in evaluating why some patients actively engage in depression self-management while others do not. There may be several explanations for this phenomenon, such that some individuals with depression may not believe their symptoms and impairments are related to depression and thus do not believe that their symptoms can be improved by depressive treatments. In addition, other patients may have concerns about certain treatments for depression (Lowe, Schulz, Grafe, & Wilke, 2006).

The need to better understand misinterpreted depressive symptoms and treatment preferences of patients is undeniable. Determining how individuals understand and define symptoms of depression is likely to be critical in understanding how they will choose to manage the symptoms. Thus, this study seeks to learn more about the characteristics of patients (e.g.

race, severity of depressive symptoms, age, educational level, and income status) that might contribute to patient's interpretation of depressive symptoms and the treatment they are likely to prefer for those symptoms. These variables will be included in the theoretical model based on their likely contribution identified throughout the next chapter's review of the literature.

Although depression frequently accompanies other chronic physical illness and pain symptoms (Bair, Robinson, Katon, & Kroenke, 2003; Brown et al., 2001; Von Korff, Ormel, Katon, & Lin, 1992), there is much confusion about how and when depression should be diagnosed in the primary medical setting. It is unclear when depression should be regarded as the primary condition or when it should be considered tertiary to a general medical condition or disability (Von Korff et al., 1992). Several theorists have attempted to explain the relationship found between depression and other chronic physical illnesses. Some speculate that depression creates low expectations with regard to treatments and pessimistic attitudes about treatment outcomes. These beliefs impact the patient's willingness to participate in the maintenance of their illness and thus through their lack of adherence and motivation their condition worsens (Ciechanowski, Katon, & Russo, 2000). Research also suggests that the presence of depression may even increase the likelihood of an individual developing some chronic physical illnesses (Freeland, 2004; Williams, Clouse, & Lustman, 2006). While other research findings indicate that physical illness and the medications for physical illness have the potential to induce symptoms of depression (Katon, 2003; Lustman, et al., 1992). As with much of human behavior, the actual direction of the relationship is still unclear. Despite the unclear directionality of the relationship between depression and chronic physical illness, the research indicates that comorbid depression and chronic physical illness seems to impact individual motivation to actively engage in disease maintenance. From these findings, it seems important to investigate

the role that depression and motivation play in treatment preferences. These variables will be included in the research model.

Despite the ambiguity in the direction of the relationship between depression and chronic physical illness, studies have shown that depression associated with physical illness can be successfully treated. Serotonin reuptake inhibitors and certain forms of psychotherapy have been found to be effective in the treatment of depression among the physically ill. However, for depression to be successfully treated it must first be recognized and accurately diagnosed. Yet, it has also been found that despite national practice guidelines to treat depression in the primary care setting as many as three fourths of depressed primary care patients do not receive adequate treatment for their symptoms of depression (Wells, Strum, Sherbourne, & Meredith, 1996). However, it should be noted that the treatment and care of comorbid depression and chronic physical illness is a reciprocating process that has the potential to spiral down even with timely recognition and treatment. Symptoms of chronic physical illness and depression often overlap making the recognition of depression more difficult for the clinical provider. In addition to timely recognition and accurate diagnosis of depression, for treatments to be successful, patients must also accept and adhere to the treatment protocols. Despite the fact that studies have shown that 83% to 84% of primary care patients are at least interested in treatment for the symptoms of depression (Lowe, Schulz, Grafe, & Wilke, 2006), many do not accept or adhere to the treatment protocols for depression. Some have argued that symptoms of depression impede one's ability to manage their both of their conditions which may cause both conditions to become more severe. As symptoms of the chronic condition worsen and the patient becomes more physically hindered, symptoms of depression are likely to become more prevalent. In order to better understand the gap between available and efficient treatments for depression and the low number of depressed



patients actually adherent to treatments, a more in-depth investigation of patients' understandings of emotional problems and preferences for treatment of those problems are necessary.

### **Statement of the Problem**

The literature is clear about the co-existing relationship between chronic physical illness and depression. Research suggests that depression complicates physical illness and demonstrates that the prognosis for individuals suffering from physical illness is less favorable when depression is present, than for those without depressive symptoms (Katon & Ciechanowski, 2002; Katon, Brilman, & Oldehinkel, 1993; Noel, et al., 2004; Von Korff, Ormel, Katon, & Lin, 1992). Depression has been found to increase disability and mortality among the physically ill. In fact, it has been reported that the functioning of patients with depressive symptoms (with or without major depressive disorder) in the primary care setting, is comparable to or worse than patients with chronic illnesses such as heart & lung disease, arthritis, hypertension, and diabetes (Hays, Wells, Sherbourne, Rogers, Spritzer, 1995; Jaff, Froom, & Galambos, 1994; Stein, et al., 2006). In addition to the impairments that depression may cause in patients, it also has been found that the presence of depression is more likely to induce a poor perception of health, increase the utilization of medical services, and increase health care costs associated with primary care visits (Herman, et al., 2002; Simon, Von Korff, Barlow, 1995; Unutzer, Patrick, Simon, Grebowski, Walker, Rutter, & Katon, 1997).

Some have noted that the primary medical setting was designed to manage acute medical concerns but does not do a good job of addressing chronic illness (Wagner, Austin, & Von Korff, 1996; Von Korff, Gruman, Schaefer, Curry, & Wagner, 1997). In addition, health care providers have also been found to be inefficient at detecting and treating psychological disorders, a process that is often time consuming and may require more follow-up than for other conditions.

However, research has found that the burden of depression recognition has disproportionately fallen on primary care physicians. Clinically significant depression has been found to be detectable in 20 to 30 percent of primary care patients (Katon, 2003) and the prevalence of depression within certain subpopulations of primary care patients is suspected to be even higher, particularly within the chronically ill. Yet, depression among primary care patients goes unrecognized in more than 50 percent of the cases (Brody et al., 1998; Carney, Eliassen, Wolford, Owen, Badger, & Dietrich, 1999; Coyne, Shwenk, & Fechner-Bates, 1995; Goldberg, 1995; Higgins, 1994; Perez-Stable, Miranda, Munoz, & Ying, 1990; Schulberg, Magruder, & deGruy, 1996; Simon, & Von Korff, 1995). When primary care physicians do identify patients as having depression, they misdiagnose 40% to 60% of the cases (Boland, Diaz, Lamdan, Ramchandani, & McCartney, 1996; Leo, Sherry, & Jones, 1998). Multiple factors related to the nature of the patients' illnesses and their demographic characteristics are related to physicians' ability to recognize depression. For example, Schulberg and colleagues (1996) found that primary care physicians are more likely to detect depression when the patient's symptoms are severe, or accompanied by anxiety. When patients with depressive disorders have somatic symptoms, instead of psychosocial complaints, or have co-morbid chronic medical conditions and are unwilling to discuss their psychosocial difficulties, primary care physicians are less likely to detect their depressive symptoms (Kirmayer, 2001; Kirmayer, Robbins, Dworkin, & Yaffe, 1993).

When patient variables such as gender, ethnicity, clinical presentations and symptom description, and socioeconomic status are added, the physicians' ability to diagnose depression is further hindered. With regard to gender, studies have found that depression in women is diagnosed more accurately than in men (Borowsky et al., 2000; Potts, Burnam, & Wells, 1991).

Studies have found that the African American and Latino patients' symptoms of depression consistently go undiagnosed or under-treated more often than White patients (Borowsky et al., 2000; Harman et al., 2001; Neighbors, Trierweiler, Ford, & Muroff, 2003). A patient's financial burdens and lack of medical insurance coverage for psychiatric illness has also been associated with decreased diagnosis of depression (Borowsky et al., 2000; Pincus, Vettorello, McQueen et al., 1995). Any one of these factors has the ability on its own to compromise a patient's treatment outcomes and it can be assumed that for some patients, more than one of these factors are present at any given time. Given that these variables seem to impact the recognition of depression in the primary care setting, the current research will seek to investigate the role that these variables play in causal beliefs (cognitive models) and treatment preferences (provider and mode) for symptoms of depression among a subset of primary care patients.

The individual and societal costs of untreated depression coupled with inadequate recognition, medication adherence, and substantial gaps in adequate treatment for patients of color signifies the importance for better understanding patient factors. In addition, given the fact that the majority of individuals are more likely to seek assistance in the primary care setting for symptoms of depression and the fact that primary care physicians are often the gatekeepers of other health services; the need for primary care physicians to improve their ability to accurately recognize symptoms of depression across different populations, better understand how patients attribute their symptoms of depression (cognitive illness models), and which treatments they identify as feasible is apparent.

A number of studies have examined patient preferences for the treatment of depression (Brody, Khaliq, & Thompson, 1997; Cooper et al., 2000; Cooper-Patrick, Powe, Jenckes, Gonzales, Levine, & Ford, 1997; Dwight-Johnson, Sherbourne, Liao, & Wells, 2000; Lowe, Ute,

Kerstin, & Wilke, 2006). However to date no studies found have focused specifically on the chronically physically ill African American, Latino, and White patients' attribution of depressive symptoms and treatment preferences for those symptoms. In addition only one previous study has considered alternative forms of treatment such as the use of spiritual healers (Lowe et al., 2006), however this study did not investigate these treatment options across several different ethnic groups Kremer and Gesten (2003) studied treatment preferences for depression in managed-care and Walburn and colleagues (2001) focused their treatment preference study on antipsychotic medications. However, neither study addressed depression treatment preferences among African Americans and Latinos nor do they address this issue among those with chronic medical conditions. These studies highlight the need for further investigation of treatment preferences for depression among chronically ill minority patients. Further investigation is needed in this area to better understand why certain ethnic groups are more likely to seek help in the primary medical setting for symptoms of depression. It is presumed that the knowledge gained from this study will aid in improving primary care physician's ability to recognize symptoms of depression among African American, Latino, and White patients and assist in developing treatment plans for these groups with co-occurring depression and chronic disease that will increase the potential of recovery or improvement of symptoms in both conditions. The findings from this brief review underscore the importance of better understanding patient causal attribution(s) for their symptoms of depression as well as patient characteristics that impact treatment outcomes. In addition, an understanding of how culture may impact depression symptomatology, explanation styles, causal attributions, and treatment preferences for depression has also been identified as an area in need of further examination (Adebimpe, Hedlund, Cho, & Wood, 1982; Aneshensel, Clark, & Frerichs, 1983; Neighbors, Jackson, Campbell, & Williams,

1989; Whaley, 1997). Moreover, findings concerning the efficacy of various treatments of depression suggest that there may be value in investigating patient treatment preferences that may positively impact adherence to treatment protocols.

The term “patient-centered care” has emerged and is defined as health care that is congruent with and responsive to patients’ values, needs, and preferences (Delbanco, 1992; Gerteis, Edgman-Levitan, Daley, & Delbanco, 1993). As a part of this evolution, physicians, researchers, and other allied health professionals have devoted much attention to developing strategies to improve quality of care that incorporates patient perspectives and preferences. One particular study of 117 participants investigated consumer preferences in mental health service delivery. In this study participants were divided into 3 treatment groups (outpatient psychotherapy self pay (SP); outpatient psychotherapy managed mental health care patient (MC); and the no psychotherapy group (NC). Two of the groups (SP & NC) identified treatment decision making as the most important component of treatment service delivery, with the MC group identifying treatment decision making as the second most important component of treatment service delivery behind co-payment amount (Kremer & Gesten, 2003). This accentuates the need to better understand the treatment preferences for depression in patients. As a step to improving strategies already developed for “patient-centered care,” knowledge of how chronically ill patients attribute symptoms of depression and which treatments they identify as appropriate for those symptoms has the potential to aid physicians and allied staff in clarifying which preferences need to be supported through the practice infrastructure and which patients may be at risk for not receiving the treatments they prefer, possibly leading to compliance problems (Schulberg, Madonia, Block, Coulehan, Scott, Rodriguez, & Black, 1995; Schulberg, Magruder, & deGruy, 1996).

## PURPOSE OF THE STUDY

This study seeks to investigate how chronically ill African American, Latino, and White patients, between the ages of 18 and 64, attribute their symptoms of depression, and ascertain treatment preferences within these groups. The research questions that will be examined within this dissertation are as follows:

- Q<sub>1</sub>: Among individuals with the same illness type, which predictors impact causal beliefs?
- Q<sub>2</sub>: Among individuals with the same illness type, are there differences in treatments preferences for depressive symptoms across ethnicity?
- Q<sub>3</sub>: Among individuals with the same illness type, are their differences in provider preferences for the treatment of depressive symptoms across ethnicity?
- Q<sub>4</sub>: Among individuals with the same illness type, does the number of physical symptoms of physical illness impact how patients attribute symptoms of depression?.
- Q<sub>5</sub>: Among individuals with the same illness type, does the number of physical symptoms of physical illness impact depression?
- Q<sub>6a</sub>: Among individuals with the same illness type, which pattern of causal beliefs for the symptoms of depression best predicts treatment preferences (mode) for depression?
- Q<sub>6b</sub>: Among individuals with the same illness type, which causal beliefs for the symptoms of depression best predict provider preferences for depression?
- Q<sub>7</sub>: Among individuals with the same chronic illness, are there differences in depression scores across ethnicity?
- Q<sub>8</sub>: Are there differences in treatment preferences (mode) for depression care across illness types?

## **CHAPTER 2**

### **Literature Review**

The subsequent literature seeks to understand how individual experiences of depressive symptoms, the accepted expression of depression within a culture, and other factors may present as barriers or facilitators of help seeking patterns and accurate and timely recognition of depression.

This literature review will include a review of the prevalence of depression in the primary care setting, help seeking behaviors for symptoms of depression, treatment preferences for depression in the general medical setting, the expression of depression across different ethnic groups compared to the Westernized accepted expression of depression, the recognition and diagnosis of depression in the primary medical setting, and diagnostic tools that are available for use in establishing a diagnosis of depression. The review also discusses recommended treatment modalities appropriate for co-occurring depression and various chronic diseases. Finally, an overview of the role primary care providers' play in managing depression and the barriers to optimal treatment of depression with chronically ill patients of color in primary care will be discussed.

### **OVERVIEW OF DEPRESSION**

Depression has been identified as a global chronic illness by the World Health Organization (2001) and is likely to become a leading cause of disability worldwide by the year 2020 (Lopez & Murray, 1998). The rate of depression among women is 2 to 3 times that of men and epidemiological studies show that 5.8% of men and 9.5% of women, will experience a major depressive episode in a 12 month period, with depressive symptoms being much more common

(WHO, 2001; Katon & Schulberg, 1992). Due to the differences in the prevalence of depression across gender, this variable will be used in the analyses as a predictor variable.

Medical costs associated with caring for depressed patients in the primary medical setting is generally double the cost of caring for non-depressed primary care patients (Katon, Von Korff, Lin, et al., 1995). Direct treatment costs for depression in 1990 was approximately \$44 billion dollars (Greenberg, Stiglin, Finkelstein, & Berndt, 1993) and one way managed care organizations attempt to control these costs is by restricting access to mental health specialists (Ginzberg, 1997).

### **HELP SEEKING BEHAVIORS**

Of those seeking assistance for the symptoms of depression, more than half go to their primary health physician rather than seek assistance in the specialty mental health sector. In 1997, approximately 8 of 10 patients who received outpatient treatment for depression were treated by primary care physicians rather than specialty mental health care providers (Olfson, Marcus, Druss, Elinson, Tanielian, & Pincus, 2002). In regards to African American and Latino patients with depressive symptoms, they are also more likely to be seen in the primary medical setting than in specialty mental health settings (Schoenbaum, Miranda, Sherbourne, Duan, & Wells, 2004; Vega, Kolody, Aguilar-Gaxiola, & Catalano, 1999). Research has consistently shown lower use of specialty mental health by African American and Latino patients (Algeria, Canino, Rios, et al., 2002; Chow, Jaffee, & Snowden, 2003; Diala et al., 2000). In a study utilizing a nationally representative sample, Latinos and African Americans were found at every economic level and geographic location to utilize specialty mental health services less often than whites (Algeria, Canino, Rios et al., 2002). Latinos and African Americans are also more likely to have limited access to care, fewer resources, and hold cultural beliefs that do not encourage



seeking professional help for emotional issues (Carrasquillo, Himmelstein, Woolhandler, & Bor, 1999). For instance, families with low paying jobs or no jobs, a condition most often found among African Americans and Latinos, often lack the employment based health insurance benefits needed to pay for mental health services. Yet, almost half of Latino patients seeking assistance in the primary medical setting have depressive symptoms (Mann & Garcia, 2005). With regard to Asian Americans, Chow et al., (2003) found that they were more likely than any other group to only utilize specialty mental health services as a last resort which resulted in a higher likelihood of being misdiagnosed with schizophrenia than whites. Taken together, ethnicity appears to affect access to services, perceived need, and help seeking behaviors for mental health services. The role that culture plays in the expression of depression will be explored further, later in this review.

Along with help seeking behaviors, culture also has potential to impact perceptions of mental health, interpretation of symptoms, and the way an illness is tolerated and experienced. Some cultures do not distinguish psychological problems from the soma and thus may not seek assistance from specialty mental health for their symptoms of distress (Kirmayer, 2001). Many cultures highly stigmatize mental illness and this may cause patients to deny or conceal symptoms of depression and make them more likely to display more socially accepted somatic complaints in the primary medical setting. It is also suspected that ethnicity will have an impact on treatments that will be deemed appropriate for depression. For this reason ethnicity will be an important component of the theoretical model used to predict the relationships between the variables.

## **PREVALENCE OF DEPRESSION IN PRIMARY CARE**

Depression is one of the most common conditions found among primary care patients. Studies investigating the prevalence of depression in the primary care setting estimate a point prevalence of major depression between 6 and 8 percent (Katon & Schulberg, 1992). However, more recent epidemiological studies using the Structured Clinical Interview for DSM (SCID), revealed a point prevalence of major depression of 13.5 percent (Coyne, Schwenk, & Fechner-Bates, 1995). Anseau et al., (2004) studied 2316 primary care patients and their findings also tended to support the higher prevalence of depression in the primary care setting. By utilizing the PRIME-MD, these researchers found a 31 percent prevalence rate for any mood disorder with major depression making up 13.9 percent in which 12.6 percent of the prevalence was for dysthymic disorder and 4.4 percent of the prevalence was related to minor depression. The differences in the findings of earlier studies and these current studies may likely be attributed to the fact that the SCID does not require that mood symptoms be present to diagnose depression. Another reason for these discrepant findings may exist in the fact that these studies have involved strict exclusive sampling selection criteria. In general, studies have found an overall prevalence of major depression to be between 5 and 20 percent in the primary care setting. Additionally, 2 to 3 times as many patients in the primary care setting have been found to exhibit sub-clinical symptoms of depression (Johnson, Spitzer, Williams, Kroenke et al., 1995; Katon & Schulberg, 1992). Despite the discrepancy in prevalence findings, all of these studies indicate a high prevalence of depressive disorders in primary care which seems to signify that the primary care setting plays an important role in the management of depression in this country (Barrett, Williams, Oxman, Katon, Frank, Hegel, Sullivan, & Schulberg, 1999). In fact, Brody et al., (1997) found that 63 percent of primary care patients are interested in their primary care doctor

providing help for their symptoms of distress, yet not all of these patients met the formal criteria for a major depressive disorder (pg. 405).

While most of these findings do not consider the prevalence of minor or sub-clinical depression, it has been argued that milder forms of depression may be highest among general medical patients. In addition, it has also been anecdotally suggested that these patients may also benefit from their physician's attention to their symptoms (Goldberg, 1992), especially since symptoms of depression have the potential to be persistent and highly recurrent. Furthermore, each reoccurrence of the symptoms may increase in severity. Moreover, research suggests that primary care patients with sub-clinical depression may express similar functional impairment as patients who meet formal criteria for depression (Wells, Stuart, Hays, Burnam, Rogers, Daniels, Berry, Greenfield, & Ware, 1989) and as patients with chronic physical conditions (Hays, Wells, Sherbourne, Rogers, & Spitzer, 1995). Additionally, the comorbidity of depression and chronic physical illness has also been found to increase the functional disability of patients (Wells et al., 1989).

Research suggests that the functional disability associated with depressive symptoms also seems to impact medical utilization and costs. Katon et al., (1990) found that frequent utilizers of primary care services were more likely to have accompanying depressive disorders (e.g. major depression 23.5%, dysthymic disorder 16.8%, somatoform disorder 20%) than low to moderate utilizers. In addition, Carbone and colleagues (2000) studied 526 primary care patients and also found that primary care patients identified as depressed self reported significantly more primary care visits, ER visits, and hospitalizations than patients who were not depressed.

## **TREATMENT PREFERENCES**

Several studies have examined patient preferences for the treatment of depression. Brody et al. (1997) investigated how important patients rated treatment for emotional distress and the types of mental health treatments patients desired. The researchers interviewed 403 patients across 5 primary care clinics and found that a third of the patients felt it was “extremely important for their physician to try and assist them with their emotional stress and that patients with major and minor depression were significantly more likely to want assistance than patients with no depression. Also, a subsample of patients 63% (n=130) identified that they desired some sort of counseling for their symptoms of emotional distress.

Cooper-Patrick et al., (1997) utilized focus groups with African American and White patients to study patient attitudes and preferences regarding the treatment of depression and treatment seeking. They found that African American patients more often reported the use of their spiritual principles to cope with their depression than White patients and that African Americans also discussed utilizing church and church members for support during emotionally distressful times. This study also found that patients’ attributions styles for depression symptoms ranged from life circumstances causing symptoms of depression - to beliefs that their symptoms had been caused by a co-occurring medical illness. However, this study has limitations related to the generalization of their findings. They only performed two patient focus groups (n=16), one with African American patients and one with White patients which were fairly homogeneous. Thus, these findings may have provided a narrow range of patient perspectives that may only be relevant to their study group.

Dwight-Johnson et al., (2000) sought to expand on previous research of patient treatment preferences for depression by studying a larger more diverse population of depressed primary

care patients (n=981) and found that most patients desired some sort of treatment for their depressive symptoms. In addition, they found that of those who preferred treatment 67% preferred counseling over any other forms of treatment. Finally, these researchers found that those on average who preferred some kind of treatment for depression over no treatment were wealthier, had greater knowledge about antidepressant medications, or were African American. Taken together all of these studies suggest that preferences for treatment of depressive symptoms among primary care patients vary by ethnicity, income, and knowledge about treatments. Based on these findings, these variables will be used as predictors in the current study's theoretical model. The current study will add to the research knowledge by investigating if the advent of a chronic physical illness impacts causal attributions of depressive symptoms and treatment preferences for those symptoms.

Only one study was found that investigated patient illness cognitions related to their perceptions of depressive symptoms. Brown et al (2001) interviewed 41 primary care patients with depressive symptoms and found that 68% of the patients believed that their symptoms of depression were caused by stress and 64% believed that their symptoms of depression were caused by or related to symptoms of their medical illness. In this study, it was also found that patient's illness cognitions were significantly associated with medication adherence. Based on this study, the current study seeks to investigate if patient's illness cognitions or causal beliefs impact treatment and provider preferences for symptoms of depression. To date, no studies found has particularly focused their investigation on how chronically ill patients attribute symptoms of depression.

## **RECOGNITION AND DIAGNOSIS**

Given the fact that the primary care setting has been identified as the most likely first source of services to patients with depressive symptoms, it would seem that physicians' ability to recognize and diagnose symptoms of depression would need to be optimal in order to correctly diagnose and treat the condition. However, despite well outlined protocols for the diagnosis and treatment of depression in the primary medical setting (AHCPR, 1993), physicians generally do not follow diagnostic guidelines for depression (Kirmayer, Robbins, Dworkind, & Yaffe, 1993; Badger, deGruy, Harman et al., 1994) and the condition goes unrecognized or misdiagnosed in 35 to 50 percent of primary care patients (Coyne, Schwenk, & Fechner-Bates, 1995; Simon & von Korff, 1995; Wells, Schoenbaum, Unutzer, Lagomasino, & Rubenstein, 1999).

In general, the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) is considered the customary diagnostic approach for assessing depression. The DSM-IV-TR identifies nine possible symptoms that may be present in a depressed patient: depressed mood, loss of interest or pleasure (anhedonia), loss of self-confidence/feelings of guilt, loss of future perspectives/suicidal thoughts, loss of concentration, psychomotor retardation or agitation, loss of energy/fatigue, loss of appetite and libido, and sleep disturbances (APA, 1994). The first two are core symptoms and a diagnosis of major depression requires five or more symptoms to be present with one of the core symptoms. However, in conjunction to the five symptoms occurring together, the patient's medical history must be reviewed and a physical examination is also needed to rule out other general medical conditions. In addition, the current medications the patient is taking must be considered and a review of the patient's past or present use of illegal drugs or alcohol. While these criteria for assessing major depression seem fairly straight forward, depression is still often overlooked in primary care practice (Wells, Schoenbaum,

Unutzer, Lagomasino, & Rubenstein, 1999). One might ask, why? For the most part, diagnostic criteria for depression have been developed by psychiatrists based on the findings of patients enrolled in strictly exclusive randomized controlled trials in psychiatric settings. Yet, patients who present to the general medical sector typically exhibit symptoms of depression in quite different way and these symptoms often overlap with symptoms of general medical conditions.

Primary care patients typically do not present with the core psychological complaints universally attributed to depression (dysphoric mood or anhedonia) (Montano, 1994). In the general medical setting, patients' depressive complaints are typically related to somatic symptoms (Bair, Robinson, Katon, & Kroenke, 2003). Several studies have found that more than 50% of primary care patients with depression present with only somatic complaints and that approximately 60% of these somatic complaints are pain related (Betrus, Elmore, & Hamilton, 1995; Kirmayer & Robbins, 1991; Kroenke, Spitzer, Williams et al., 1994; Simon, Von Korff, Piccinelli, Fullerton, & Ormel, 1999). Many of the symptoms present in depressed primary care patients are also symptoms that can be caused by chronic physical illness and have the ability to occur independent of depression. Given this fact and pattern of symptom presentation in most depressed primary care patients, medical providers most often attempt to rule out physical illness rather than an underlying depressive disorder. Patients presenting with somatic complaints, in general, are more likely to have sub-clinical or milder depression that will go undiagnosed (Gerber, Barrett, Barrett, Oxman, Manheimer, Smith, & Whiting, 1992). Sub-clinical cases of depression in the primary care setting can be difficult to recognize than more severe cases, however sub-clinical cases of depression are more common in the primary medical setting (Bair, Robinson, Katon, Kroenke, 2003).

Multiple symptoms and physical complaints such as nonspecific musculoskeletal and back pain have been found to be positively correlated with depression (Von Korff, Dworkin, LeResche, & Kruger, 1988). There is evidence which has demonstrated that depression may be associated with multiple unexplained pain and medical symptoms (somatization) (Gallagher, & Verma, 1999; Lindsay & Wyckoff, 1981; Simon & Von Korff, 1991). In a recent study, 48% (N=299) of individuals with somatoform disorder also had some form of depressive disorder (Barsky, Orav, & Bates, 2005). This literature implies that depression and chronic pain syndromes coexist, exacerbate one another, and may share biological pathways and neurotransmitters. In addition, research indicates that depressed primary care patients often present with overlapping symptoms of depression and physical complaints. These physical complaints typically are medically unexplained (Katon, Sullivan, & Walker, 2001) and as the number of symptoms of physical illness increases, so does the percentage of patients who meet formal criteria for major depression (Kroenke, Spitzer, deGruy, Hahn, Linzer, Williams, Brody, & Davies, 1997). Yet, when depression co-occurs with other general medical conditions, it compounds the diagnostic chances of recognition or misdiagnosis of symptoms of depression. In general as the number of physical comorbidities and medical conditions increases; the possibility of recognizing depressive symptoms decreases (Rost, Nutting, Smith, Coyne, Cooper-Patrick, & Rubenstein, 2000; Simon, Von Korff, Piccinelli, Fullerton, & Ormel, 1999; Simon & Von Korff, 1991). In cases where depression symptoms are missed, the search for other physical explanations of the symptoms cause unnecessary increases in medical utilization costs.

Clinical presentations of depressive symptoms have been found to impact a physicians' ability to recognize depressive symptoms in primary care patients. It has been found that patients who present with more severe disability are more often recognized as depressed than



patients with minor symptoms (Simon & Von Korff, 1995). In addition, when patients with psychological disorders present with somatic symptoms, instead of psychosocial complaints, or fail to discuss their psychosocial difficulties; primary care physicians are also less likely to detect their condition (Kirmayer, 2001; Kirmayer, Robbins, Dworkin, & Yaffe, 1993).

A patient's gender, age, socioeconomic status, and education are additional factors that impact detection of depressive symptoms. In general, physicians are better at detecting depression in women than in men (Schulberg et al., 1996; Zung, Broadhead, & Roth, 1993) and depression is more frequently recognized in middle-aged patients than in young adults or the elderly (Borowsky, Rubenstein, Meredith, Camp, Jackson-Triche, & Wells, 2000, Harman, Schulberg, Mulsant, & Reynolds, 2001; Schulberg et al., 1996). In support of these findings, Borowsky and colleagues (2000) utilized data from a national sample (n=19,309) and found that certain demographic and clinical variables were more often associated with detection. In their study, it was also found that depressive symptoms were more often identified in patients that were older, female, white, not married, less educated, or from lower socioeconomic statuses. Based on these findings, this study seeks to learn more about the characteristics of patients (e.g. race, severity of depressive symptoms, race, age, educational level, and income status) that might contribute to patient's interpretation of depressive symptoms and the treatments they are likely to prefer for those symptoms. These variables will also be incorporated in the theoretical model used in hypothesis testing.

Patient ethnicity has also been associated with the physician's ability to detect symptoms of depression. Research suggests that cultural beliefs and practices affect the manner in which individuals both express or manifest depression and how they will experience symptoms of depression (Adebimpe, Hedlund, Cho & Wood, 1982; Fabrega, Mezzich, & Ulrich, 1988; Lam,

1995; Whaley, 1997). Ethnicity of the patient and the physician also appear to be a factor in the recognition of depression. When physicians are of a different cultural background than their depressed patients, they are also less likely to detect their depression (Goldman et al., 1999). However, regardless of the physicians' ethnicity, African American and Latino patients' symptoms of depression are less likely to be detected than white patients (Borowsky et al., 2000; Harman et al., 2001). These findings may suggest that White physicians may have greater trouble detecting depression in African American and Latino patients than physicians of color; however, there do not appear to be any studies that have specifically examined this issue. What these few studies do make clear is that patients of color are less likely to have their depression recognized by their physician, making it less likely that they will receive appropriate care. Depressed African Americans and Latinos are more likely to present in the primary medical setting rather than specialty mental health settings, the need for a greater understanding of disparities in physicians' detection abilities, how African American and Latino patients attribute symptoms of depression, and what treatment preferences for symptoms of depression they identify as most appropriate is compelling. It is assumed that this knowledge will improve treatment adherence and treatment outcomes among this population. Ethnicity will also be a variable included in the theoretical framework.

Causal attributions of symptoms also play a major role in identifying depression in primary care patients. Given the wide variety of professional and lay opinions regarding symptoms of depression it is not surprising that patients enter primary care with pre-existing attributions of their symptoms of depression. For example, patients presenting in primary care are also less likely to use the term depression as the reason for the visit (Zung, Broadhead, & Roth, 1993). However, some research indicates that direct inquiry about depressive symptoms

by the physician increases the likelihood of patients openly expressing emotional distress and a desire for help (Brody, Khaliq, & Thompson, 1997). Various explanations and understandings of symptoms of depression have the ability to impact the process and outcome of treatment (Addis, Truax, & Jacobson, 1995). Different explanations for a problem often suggest different approaches to treatment. For instance, patients who believe that their symptoms of depression were caused by an imbalance in their spiritual and physical life, may be more prone to seek services from religious leaders. Depending on the physician's tendency, this may or may not be seen as an acceptable treatment option.

One of the major problems with recognizing and diagnosing depression in the general medical setting is that there are no definitive tests available. Most medical conditions have physiological tests that aid in the diagnosis of disorders (Lustman, Griffith, Gavard, Clouse, 1992). The results of these tests coupled with the primary patient complaints, and past medical history typically would be used to diagnose medical conditions (Goldberg, 1995). However, with depression no such laboratory tests exist and time constraints present challenges for the physician to conduct in-depth interviews needed to detect depression. This concern about properly recognizing and diagnosing depressive disorders in the primary care setting has led to the development of diagnostic systems and screening instruments modified for use in the primary care environment. The American Psychiatric Association modified the DSM for primary care now known as the DSM-IV-PC. This modification of the DSM uses algorithms organized by a symptom key and is specific for every disorder. The initial step in each algorithm requires the physician to rule out a medical condition or substance abuse (Brown & Schulberg, 1998). Another system that has been modified for the primary medical setting was the International Classification of Disease (ICD-10), which in reference to primary care is referred to as ICD-10-

PHC. This classification system was developed by the World Health Organization and consists of a symptom index and flow chart which guide the physician to one of 24 cards connected to major psychiatric disorders. Each card identifies the key clinical features of the disorder and differential diagnosis (Brown & Schulberg, 1998). Other inventories have also been developed to aid in the recognition of depression in the primary care setting. The Primary Care Evaluation of Mental Disorders (PRIME-MD) and the Symptom Driven Diagnostic System for Primary Care (SDDS-PC) both are instruments that consist of brief self-report items that are to be followed by a more structured interview.

However, even when depression is appropriately diagnosed it has been found that the treatments have still been less than optimal. In particular, the dosage of pharmacotherapy and duration of both psychotherapy and medications typically do not follow current recommended treatment guidelines (Kessler, Lloyd, Lewis, & Gray, 1999; Simon & von Korff, 1995). Katon et al. (1992) found that half of HMO primary care patients meet clinical criteria for major depression, but less than half of them received treatments during the preceding year and only one fourth of those receiving treatment received adequate doses of antidepressant therapy for the recommended time period to relieve their symptoms of depression. This finding has been consistent across other studies as well (Lewis, 2001).

## **BARRIERS TO OPTIMAL MANAGEMENT OF DEPRESSION IN PRIMARY CARE**

### **Recognition barriers**

Several factors may be potential barriers to the recognition and successful treatment of depression in primary care. The high volume of patients served in primary care, the short amount of time allotted for patient visits, and lack of expertise in diagnosing and treating depression by primary care physicians may all contribute to underrecognition of depression. In

addition, mental illness in this country, unfortunately, is still highly stigmatized and is often regarded as a personal sign of weakness (Kirmayer, 2001). For this reason, patients may also deny or minimize their symptoms of depression and may be reluctant to share information they feel may be disclosed to employers or insurance agencies.

Patient perceptions of depression also play a role in the recognition of depression in primary care. Patients may rationalize their symptoms as normal responses to life circumstances or due to other medical conditions and medications. Even some physicians may feel that the identification of a precipitating event disqualifies a patient from a diagnosis of depression (Cole & Raju, 1996). However, 50% of patients with diagnosable depression have an identifiable precipitating event and it should be noted that even precipitated depression has the same symptoms, impairments, and treatment responses as depression without a precipitating event (Goldberg, 1993). Lastly, patient beliefs and attitudes regarding the legitimacy of depression as a medical condition may affect willingness to present purely affective symptoms to the physician. Thus, patients may conceal symptoms of depression or describe and attribute symptoms in relation to other medical concerns (Klinkman, 1997). Based on these findings, patient causal beliefs with regard to depressive symptoms will be the one of the main focus of this study.

Physician training may also contribute to the underrecognition of mental illness in primary care patients. Traditionally, the medical training of primary care physicians has lacked or provided inadequate psychiatric education in their medical schools and residencies. Surveys of physicians have supported this notion in that many primary care physicians feel that they have been inadequately trained to diagnose and treat mental disorders and tests of medical residents'

knowledge reveal that their training in mental health diagnosis and treatment is insufficient (Cohen-Cole et al., 1993).

Some research also indicates that reimbursement rates play a significant role in depression recognition. Rost et al. (2000), suggest that some primary care physicians deliberately substitute another diagnosis for major depression when they feel that the patients insurance may not pay for the visit. Many insurance plans reimburse primary care treatment of affective disorders at lower rates and sometimes not at all (Cole & Raju, 1996)

### **Cultural Relativity vs. Clinician Bias**

Research literature evaluating the recognition and detection of depression in the primary care setting has postulated different explanations for the difficulties physicians have in detecting depression in patients. Some have argued that ethnic groups exhibit symptoms of distress and depression in similar patterns, but the clinician assign a different diagnosis depending on the ethnic group membership of the patient. This pattern of misdiagnosis has been described in the literature as “Clinician Bias” (CB) (Adebimpe, Hedlund, Cho, & Wood, 1982; Aneshensel, Clark, & Frerichs, 1983; Neighbors, Jackson, Campbell, & Williams, 1989; Whaley, 1997). Simon and colleagues (1973) found that even when African American symptoms of distress are almost identical to their European American counterparts, African Americans are diagnosed most often as having more severe mental health problems. Interestingly after 20 years, recent research still finds similar findings even when clinicians utilize semi-structured interview guidelines based on DSM criteria. Neighbors et al (2003) found that African Americans are more likely to be diagnosed as being more psychotic and admitted into inpatient settings based diagnoses of Schizophrenia over mood disorders than European American (Neighbors, Trierweiler, Ford, & Muroff, 2003).

Although most of the research in this area has focused its attention on the “Black vs. White” ethnic dichotomy, some have found episodes of clinician bias in other ethnic minority groups. Li-Repac (1980) found that when European American therapists and Chinese American therapists assessed clients of the same and different ethnic groups, European American therapists tended to rate the symptoms of the Chinese American clients as more severe whereas Chinese American therapists rated the symptoms of the European American clients more severe.

While certain universal patterns of expressing depression (i.e. disturbance in sleep patterns, fatigue, changes in appetite, weight gain or loss, reduced ability to concentrate and focus) are emphasized in commonly used diagnostic tools such as the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-R) and the International Classification of Diseases and Related Mental Health Problems (ICD-10) (Ballenger, Davidson, Lecrubier, 2001), research literature suggests that there may be variation in the symptom presentations of distress across different ethnic groups that is vital to the recognition of depression among these groups (Adebimpe, 1981; Adebimpe, Hedlund, Cho, & Wood, 1982; Brown, Schulberg, & Madonia, 1996). In fact, some postulate that misdiagnosis among groups of color is largely related to ethnic differences in the symptoms of depression which do not fit neatly into the Westernized syndrome. They further propose that providers are unaware or insensitive to these differences and thus mistakenly assign the wrong diagnosis to individuals belonging to ethnic groups of color. This pattern of misdiagnosis has been termed in the literature as “Cultural Relativity” (CR). Fabrega et al. (1988) found that different ethnic groups have unique expressions of depression. This finding has been consistently supported across several empirical studies involving different ethnic group comparisons (Fabrega, Mezzich, & Ulrich, 1988; Whaley, 1997).

The literature concerning CB and CR has portrayed these phenomenon as if one or the other takes place in any given depression recognition or misdiagnosis situation. However, a number of individual variables may impact the presentation of depression exhibited by a given patient which in turn may impede a physician's ability to recognize depression within that patient. For instance, Yanagida and Marsella (1978) found that certain cultural variations in symptoms of depression may be specific to particular subclusters of any given ethnic group. In individual factors shall be referred from this point as "within group relativity."

### **Cultural Competency and Within Group Relativity**

While understanding cultural variations in symptom presentation is important, it is not the only element necessary for the accurate diagnosis of an individual. Depending only on cultural understandings to determine how a particular member of an ethnic group will explain and express symptoms of depression fails to account for subtle differences and variation of symptoms of distress found within a given ethnic group. In fact, the Mental Health: Culture, Race, and Ethnicity supplemental report from the Surgeon General (1999) cautions against the generalizing from the ethnic and cultural characteristics of a known group to any given individual "based on their appearance or affiliation." Any diagnosis given to a patient based on such broad categorizations or indiscriminate likelihoods is stereotyping and often will lead to misdiagnosis of the patient's condition (Surgeon General, 1999). Individual level factors can contribute to the onset, duration, and recurrence of the depressive symptoms as well as impact how an individual expresses depressive symptoms. Yet, sole dependence on the individual level factors without consideration or understanding of the patient's ethnic background can still lead to considerable misunderstandings of the patient's symptoms and expressions of distress. In essence, it is important to see and treat the patient as a whole; taking into consideration both his



or her ethnic membership and any relevant individual level factors that may be attributing to the presenting symptoms (Brown, Abe-Kim, & Barrio, 2003).

Many studies utilizing standardized methods have demonstrated crude differences in the symptom presentation of depression across and within ethnic groups and subgroups. This section will outline how different ethnic groups manifest depression. Within the summary of each ethnic group, this review will also demonstrate how demographic variables impact within group relativity. The intention of this section is to focus on the between group and within group relativity aspects of the presentation of depression among five ethnic groups: European Americans, African Americans, Latinos, Asian Americans, and Native Americans. The focus on between group and within group relativity seems particularly relevant to the primary care setting for several reasons. First, research on cultural competence (e.g knowledge and awareness of cultural differences) suggests that awareness of cultural differences has a positive impact on cultural bias, such that, knowledge of cultural differences in the manifestation of depression between and within different cultures may improve a physician's ability to detect depression within individual's of various ethnic groups (Neighbors et al., 2003). One might presume that by improving a physicians' ability to recognize cultural differences in the expression of depression (CR), clinician bias (CB) should also improve.

### ***European Americans***

The symptoms of the westernized syndrome of depression have been primarily categorized from concepts, diagnostic tools, and clinical trials based on observations of European Americans (Lawson, 1986; Neighbors, Jackson, Campbell, & Williams, 1989). This group's manifestations of depressive symptoms are based on psychological impairment which include depressed mood states, feelings of hopelessness, and anhedonia (loss of pleasure in things that

normally bring enjoyment). It has been found that depressed European Americans are more likely to directly attribute problems that they are having to depressed mood states, whereas most other groups describe their symptoms related to physical states. Several studies have also reported that European Americans tend to exhibit more suicidal ideation and sleep disturbances related to their depression other ethnic/racial groups (Jenkins, 1997; Wohl, Lesser, & Smith, 1997).

Interestingly, European Americans are an ethnic group that is often mistakenly seen as homogeneous. Research is very limited concerning how different demographic factors impact the manifestation of depression within European Americans. Literature examining depression within European Americans has mostly focused on the prevalence of depression rather than the manifestation of symptoms. In addition, research examining ethnic group differences in the presentation of depressive symptoms has typically utilized European Americans as the reference group with the underlining assumption that all Europeans psychologize their symptoms of depression. However, recent research suggests that older European Americans and European Americans who seek mental health treatment in primary care settings almost exclusively describe their symptoms of depression in somatic complaints rather than psychological in nature (Kirmayer, Robbins, Dworkind, & Yaffe, 1993; Mills, Alea, & Cheong, 2004).

### ***African Americans***

African Americans have a long history in the physical health and mental health literature as the primary comparison group to European Americans. Research literature has found that on average, African Americans are likely to have poorer health and mental health outcomes than European Americans and has also demonstrated that depression is more often misdiagnosed

among African Americans than their European American counterparts (Adebimpe, 1981; Whaley, 1998).

Depressed individuals of African descent have been reported to focus their symptom expression of depression on somatic complaints and physical functioning impairments (Adebimpe, 1981; Brown, Schulberg, & Madonia, 1996). Research with African Americans primary care patients has indicated that medically unexplained complaints of pain or numbness in patient's chest, neck, head, arms, and stomach as typical symptoms related to depression within this group. Other symptoms associated with depression in African Americans also have been found to include suspiciousness, paranoia, agitation, hostility, and aggression (Adebimpe, 1981; Fabrega, Mezzich, & Ulrich, 1988; Whaley, 1998).

Research investigating the paranoid symptoms of depression has found that African Americans are more likely to exhibit mild paranoia related to depression than Whites. Several studies have found that mild paranoia in African Americans manifests in the form of lack of trust in interpersonal relationships, hypersensitivity and self consciousness, as well as feelings of alienation and powerlessness (Fenigstein & Vanable, 1992; Mirowsky & Ross, 1983). Mirowsky and Ross (1983) postulate that mild paranoia is not just culturally determined, but is also based on realistic concerns related to oppression, victimization, and exploitation. Ethnic groups who experience constant states of powerlessness and victimization may have an increased risk of developing paranoid type symptoms when encountering individuals from the dominant ethnic group or those seen as being the oppressor. In this context, mild paranoia serves as a protective factor. Consequently, culturally oppressed groups may not exhibit symptoms of depression such as feelings of inadequacy or helplessness that have been associated with the dominant ethnic group. Whaley (2001) asserts that paranoia is often misunderstood within

oppressed groups and insensitivity to societal conditions that elicit paranoid responses from certain ethnic groups negatively influences a practitioner's ability to accurately diagnose certain ethnic groups.

Like oppression and victimization, other within group factors impact how individual African Americans manifest depression. Several studies have demonstrated that gender, age, and socioeconomic status are related to differences in the presentation of depression within African Americans (Cayleff, 1988; Hauenstein, 2003; Nations, Camino, & Walker, 1988; Sachs-Ericsson, Plant, & Blazer, 2005; Williams, Takeuchi, & Adair, 1992).

Depressed African American women have been found to attribute or explain symptoms of depression in terms related to their "nerves" (Cayleff, 1988; Hauenstein, 2003; Nations, Camino, & Walker, 1988). For instance, Camino (1989) found that African American women described symptoms of depression as "irritated nerves" which included symptoms such as heart palpitations, high irritability, chest pains, shortness of breath, sadness, and excessive "worriation." This classification of symptoms has not as of yet been identified by African American males in the research literature.

Research comparing depressed African Americans and their European American counterparts indicate that socioeconomic variables have the tendency to mediate the relationship between race and depression for African Americans (Sachs-Ericsson, Plant, & Blazer, 2005; Williams, Takeuchi, & Adair, 1992). Several studies have investigated how socioeconomic indicators impact symptoms of depression among African Americans but have yielded discrepant findings. Most of these studies have utilized small community samples that may not generalize to other samples of African Americans. However, Neighbors (1986) surveyed a national sample

of African Americans and found that those living in the lowest poverty index were more likely to express symptoms of depression in terms related to their physical health.

### ***Latinos***

Latinos have become the largest group of color and are the fastest growing ethnic group in the United States. In addition to the sheer size of this cultural group, there is also tremendous variation within; related to customs, language, and origin that has been found to impact the symptom presentation of depression within this group. This section will review some of the general similarities in symptom presentation of depression among Latinos, and then outline how different subgroups and individual factors contribute to within group differences.

Latino descendents are likely to focus their symptoms of depression on somatic complaints (Escobar, Rubio-Stipec, Canino, & Karno, 1989; Marin, Escobar, & Vega, 2006). Similar, to African Americans these symptoms may include medically unexplained trembling, heart palpitations, paralysis, fainting, numbness or tingling, chest pains, dizziness, and difficulty breathing (Guarnaccia, Canino, Rubio-Stipec, & Bravo, 1993; Marin, Escobar, & Vega, 2006). Depressed Latinos subgroups may also complain of or express experiences of having little to no emotional control, emotional exploding, inability to cope, excessive worrying and jittery (on the edge feelings) (Guarnaccio, Lewis-Fernandez, & Marano, 2003). Both sets of these symptoms have also been described as the Latino syndrome *nervios* (Jenkins, 1997; Salman, Liebowitz, Guarnaccia, Jusino, Garfinkel, 1998). Within group relativity in the symptoms of depression has also been differentiated within Latino subgroups. For instance, Pina and Silverman (2004) found that Cuban Americans are less likely to somatize then other Latino subgroups, and that Cuban youth were more likely to somatize their symptoms of distress than European Americans. In addition, this study illustrated consistent findings with other studies, which suggest that less

acculturated Cubans are more likely to describe symptoms of distress in somatic complaints rather than psychological complaints.

While it has been noted that Latino subgroups are more likely to focus their attention on physical symptoms of depression, research also illustrates a tendency for Latinos to describe their symptoms of distress as being more severe when interviewed in their native language (Coelho, Strauss, & Jenkins, 1998; Marin, Gamba, Marin, 1992). This tendency towards extreme descriptors has been linked to both education and level of acculturation, with less educated and less acculturated individuals displaying a higher tendency for extreme descriptions of symptoms. Some research also suggests that the combination of language and socioeconomic status is likely to mediate the symptom presentations of depression within Latino groups (Taylor, Szatmari, Boyle, & Offord, 1996). For instance, Ortiz and Arce (1984) surveyed a national sample of Latinos and found the relationship between language of interview and the expression of depression symptoms was contingent on SES. In this study, lower SES status Latinos reported more depressive and somatic symptoms when interviewed in their native language, whereas, middle-class Latinos reported more depression and somatic symptoms when interviewed in English.

However, other research has found that these variables become even more confounded when several interview language choices are given to the participant. These studies find that when Latino individuals give responses in two languages (English and their native language), they show a tendency to give culturally relevant responses in the native language and socially desirable answers in the second language (Marin, Triandis, Betancourt, & Kashima, 1983). Related to this, Malgady and Zayas (2001) note that when some patients are interviewed in their non-Native language their symptoms were more likely to be classified as less severe than when

interviewed in their native language. Some have speculated that difficulty communicating in the non-native language could prompt greater caution and control over their emotions (Del Castillo, 1970; Marin, Triandis, Betancourt, & Kashima, 1983).

### ***Asian Americans***

Asians account for over 50 percent of the earth's population. As alluded earlier, large classifications of a group of people typically has the tendency to falsely suggest homogeneity within the group. However, as is true for most groups there is enormous variability within the Asian ethnic/racial group, which accounts for more than 25 subgroups. Yet, not all of the Asian subgroups have been empirically studied to be able to articulate anything significant concerning their depressive symptomology. The scope of this outline of within group and between group differences among Asian Americans will primarily reference what is known about Chinese Americans manifestations of depression. Although many Asian American groups reside in the United States research has primarily focused on Chinese American groups.

Distressed Chinese American patients have been found to report both somatic and psychological impairments (Kleinman, 1982; Yeung, Gresham, Nierenberg, & Fava, 2004). While the diagnosis of Neurasthenia is no longer used in the United States, reports of *Shenjing Shuairou* within the Chinese culture, literally meaning spiritual imbalance and nerve weakness or degenerating nerves, has been empirically linked to classic symptoms of depression based on both DSM and ICD criteria (Cheng, 1989; Kleinman, 1982; Lee & Wong, 1995; Yan, 1989; Zhang, 1989). For instance, researchers have found that some 40 to 90 percent of patients diagnosed as having neurasthenia actually met the criteria for depression and showed marked improvement when treated with antidepressants (Kleinman, 1982). It is speculated that because the term and diagnosis of neurasthenia remains prevalent within the Chinese culture, Chinese

American primary care patients may also tend to explain or describe their symptoms of depression as being neurasthenic in nature.

Similar to “*Nervios*” in the Latino culture and “*worriation*” in the African American culture, “*Neurasthenia*” includes somatic symptoms such as irritated nerves (usually described as nerve weakness), dizziness, physical weakness, fatigue, insufficient blood levels or vital energy (*qi*), poor appetite and stomach pain, chest pain and backpain. Some of the psychological complaints may include dysphoria, difficulty concentrating, and anxiety (Kleinman, 1982; Lam, 1995).

The neurasthenic labeling of depression symptoms among Chinese Americans may be more acceptable because their symptoms are then seen as symptoms of “common illness” rather than symptoms of a “psychological disorder.” This normalizes the disorder as something common to everyone rather than identifying the symptoms as a reflection of the family (i.e. bad blood). However, some suggest that somatic labeling of symptoms is the result of Asian Americans inability to separate their physical body from their psychological and emotional selves. For this group, the mind, body, and social environment are seen as inseparable entities (Kuo & Kavanagh, 1994; Chen, 2005). To exemplify this issue, Parker and colleagues point out that within some Chinese cultures verbalized expressions of distress are not typically communicated in words that clearly specify emotions. Instead verbalizations regarding emotions or feelings of distress within this ethnic group most often are conveyed in metaphors concerning the physical body, and symbolization (Parker, Gladstone, & Chee, 2001). Studies with Asian Americans demonstrate that descriptions of “heartaches” can convey “sadness” to members within this culture, whereas descriptions of “physical fatigue” and “tiredness” denote feelings of hurt or despair (Tung, 1994; Ying, 1988,1990).



Within group relative manifestations of depression seem to be impacted by acculturation, age, and language among Asian Americans. For instance, several studies have demonstrated that less western acculturated Chinese Americans have the tendency to endorse somatic symptoms over affective symptoms, however, when further questioned patients will acknowledge psychological dimensions of their depression (Kleinman, 1982; Yen, Robins, & Lin, 2000). Research has also demonstrated that more acculturated Chinese Americans and U.S. born Chinese students show a greater tendency towards expressing symptoms of depression similar to European Americans than less acculturated Chinese Americans and those not born in the United States (Ying, Lee, Tsai, Yeh, and Huang, 2000).

Some speculation has been made regarding the symptom presentation of older Asians Americans, particularly related to language barriers and physical isolation most often found within this group. In support of these speculations, empirical evidence suggests that older monolingual Asians are more likely to maintain mainland expressions of depression compared to older Asians who are more acculturated through bilingual abilities (Diwan, Jonnalagadda, & Gupta, 2004). Since no research has compared the symptoms of monolingual younger Asian Americans to older monolingual Asian Americans this effect as of yet can not be determined if it is related to acculturation or age within this ethnic group.

### ***Native Americans***

Native Americans like Asian groups are diverse in culture, which makes it very difficult to treat this group as a single cultural population. The Bureau of Indian Affairs reports that there are an estimated 500 federally recognized Native American tribes and more than 360 state level recognized subgroups in the United States (Whitbeck, McMorris, Hoyt, Stubben, & LaFromboise, 2002). Each of these identified tribes may vary in language, values, spiritual

beliefs, and level of acculturation. As with other ethnic groups, there may be more within group variation in the expression of depression than between group differences; all of which has the potential to impede the physicians' ability to recognize, diagnose, or even compare Native Americans ethnic groups (Whitbeck, McMorris, Hoyt, Stubben, & LaFromboise, 2002). In making considerations for this diversity within Native Americans cultures, this section will present some empirical evidence that is known about symptom presentation of depression within individual tribes, as well as review some case studies that demonstrate depressive symptomology within a particular Native American client. In addition, other anecdotal evidence that researchers in the field suggest as indicators of depression within this group will be discussed.

Many Native Americans groups reference their symptoms of depression with regard to spiritual harmony and tribal connectedness (geographical and emotional). The reason for this lies in the cultural identification of many Native American tribes. From what is known, Native Americans cultural identity can be described as comprising three component parts: the community, the spiritual, and the environment. The community component signifies the individual's personal belonging and responsibility to the tribe and family. The spiritual component signifies connection to the ancestors/clan, their Indian name, involvement in tribal ceremonies and traditions, and relationships to divine entities (Reichard, 1983). The environmental piece encompasses the importance of, respect for, and use of their natural surroundings. Disturbance in any of these realms has the potential to create depressive symptoms in individuals from this group. In a case study with a Native American from a Montana tribe, O'Neill (1998) notes that he describes his depressive symptoms in an acculturated westernized way. The interviewee (Lionel) states that he has "low energy, complete loss of interest in fishing or basketball, trouble falling asleep, loss of appetite, and recurrent thoughts of

death by suicide.” However, he also outlines several culturally relevant indicators of his symptoms of depression particularly related to his isolation from his tribal family (O’Neill, 1998). Johnson and Johnson (1965) also note a syndrome of “totally discouraged” among Sioux Indians. The symptoms of this disorder overlap with symptoms of clinical depression and encompass feelings of helplessness and thoughts of death, but also include a preoccupation with being haunted by spirits and ghosts.

Native Americans report symptoms of depression that can be classified as creating impairment in both mind and the physical body. Descriptions of anger, agitation, loss of libido, sinfulness (related to spiritual harmony), shame, not being liked, sadness, suicidal ideation, and loneliness or social isolation are all symptoms found to be associated with depression in Native Americans (Whitbeck, McMorris, Hoyt, Stubben, & LaFromboise, 2002; O’Neill, 1998). As noted, social isolation appears to be a key indicator or symptom of depression for individuals within some Native American descent. Since many of these groups have a central focus of interdependence, expressions of loneliness are usually red flags of distress within this group (O’Neill, 1998; Reichard, 1983). Expressions of loneliness typically will signify poor relationships with the tribe that in many Native American cultures has been found to sustain the individual economically, spiritually, and psychologically (O’Neill, 1998). For many Native Americans isolation, whether it be emotional or geographic, has the potential to cause symptoms of depression. However, it is important to identify why an individual of Native American descent is experiencing isolation and whether that isolation is for culturally acceptable reasons such as divorce, family loss, or development/maturity or non-acceptable reasons such as individual choice, or immature behavior such as not following tribal protocol or roles (Griffin-Pierce, 1997; O’Neill, 1998).

Within group relative factors among Native Americans has mostly focused on age differences in symptom presentations of depression. Age appears to have a significant impact on how symptoms of depression will be expressed among Native American groups. Teenage and young adults have been found to demonstrate more anger as an expression of depression than older age groups (Le Master, Beals, Novins, Manson, & AI-SUPERPPF team, 2004; O’Neill, 1998). In fact, younger Native Americans are more likely to openly express symptoms of depression whereas any focus on individual distress or misfortune among older Native Americans is considered a sign of “immaturity” and typically precludes them from expressing any symptoms of depression (O’Neill, 1998; Rieckmann, Wadsworth, & Deyhle, 2004; Whitbeck, McMorris, Hoyt, Stubben, & LaFromboise, 2002).

### **Diagnostic barriers**

#### ***Competing demands and Time management***

The concept of competing demands impacting service delivery is clearly relevant to the recognition and treatment of depression in the primary care setting. Depressed primary care patients have been found to have other health care needs and most often present with somatic complaints. The current knowledge about mood disorders unfortunately has been derived from small highly exclusive samples of psychiatric inpatients primarily with major depression. Yet, primary care physicians experience with depressed patients is fundamentally different (Rush, 1994). The cases that these physicians encounter are likely to have coexisting medical conditions and most often will have comorbid sub-clinical cases of depression. Thus the presence of multiple demands during a physician-patient encounter may result in attention to symptoms most emphasized by the patient and inattention to concerns or symptoms that may take more time to address (Klinkman, 1997).

Many primary care environments require physicians to assess, diagnose, and treat patients in a very brief patient-doctor encounter (Boland, Diaz, Lamdan, Ramchandani, & McCartney, 1996). Managed care organizations also require physicians to see and treat a high volume of patients at fixed fees for ambulatory visits. Anecdotal evidence suggests that the time constraints imposed by managed care systems are inconsistent with the time requirements needed to accurately diagnose and treat depression in the primary care setting (Barrett et al., 1999; Pincus, Vettorello, McQueen et al., 1995). Diagnosing psychological disorders is a structured process that begins with the identification of the presenting problem, assessment, diagnosis, and implementation of a treatment plan. Typical therapist patient encounters utilized to diagnose psychological disorders range from 45 to 90 minutes. In contrast, primary care physicians provide care for multiple problems simultaneously in cyclical time periods of 10-15 minutes. In this time period, physicians must choose which concerns require immediate attention and treatment. Ultimately, in deciding which symptoms will get attention the physician is also deciding which will be ignored (Klinkman, 1997). Research also indicates that duration of a primary care visit is significantly associated with rate of recognition of depression by the primary care physician. In particular, a diagnosis of depression was recorded 1% more often for each additional minute that a primary care visit lasted (Harman, Schulberg, Mulsant, & Reynolds, 2001).

### ***Management in the general medical setting***

There are long standing concerns about the comparability of depressed patients in psychiatric settings with those found in the primary medical setting. Ormel and Tiemens (1995) note that relevance of randomized clinical trials with psychiatric outpatients to the treatment of depression in primary care patients largely depends on the similarity of the disorder, patient

characteristics, and the circumstances under which treatment was offered across the two types of settings. Coyne et al. (1997) point out that these conditions do not seem to have been met. The management of depressed patients in the primary medical setting has offered many challenges to primary medical physicians and support staff. First, the clinical expression of depression in primary care patients seems to differ from psychiatric outpatients. Most depressed patients in the primary care setting do not present with depression as their chief complaint (Coyne, Schwenk, Smolinski, 1991). Secondly, detection and treatment of depression in the primary medical setting occurs in the context of brief clinical encounters during which a multiple of “competing demand” must be prioritized (Coyne, Klinkman, Gallo, & Schwenk, 1997; Susman, Benjamin, Crabtree, & Essink, 1995).

What seems most compelling about the detection and treatment of depression is that even when symptoms of depression are detected, research indicates that patient outcomes still do not improve. Dowrick and Buchan (1995) found positive screening for depression did not improve patient outcomes. Schulberg et al (1987) also found that detection did not improve primary care patient outcomes in a small community sample and finally, Simon and Von Korff (1995) also failed to demonstrate improved outcomes for detected depressed patients in the primary setting. Although these studies were limited in their generalizability, the consistency of their results is striking.

The failure to find a link between physician detection and improved patient outcomes for depression in the primary care setting has stimulated a critical reappraisal of this issue among researchers. Some have speculated that the outcomes of patients presenting with affective conditions in the primary care setting largely depend on factors that are outside of the primary care physician’s control (Tiemens, Ormel, & Simon, 1996). In support of this, Coyne et al.

(1997) found that undetected primary care patients showed significant short-term improvement whereas, detected depressed primary care patients did not improve. This result remained consistent even when age and severity of depression were controlled. These findings suggest that other factors may need to be explored to better understand patient outcomes with regard to the treatment of depression in the primary care setting. Of particular interest are the patient level factors such as the patients understanding of their symptoms of depression and the treatments that they prefer for their symptoms.

### ***Carve-out care vs. integrated health care***

Most often primary care physicians are expected to treat depression in the primary care setting rather than refer out to specialty mental health providers. Mechanisms such as capitation, gate keeping, pre-referral authorization, and practice profiling have resulted in primary care physicians providing a broader array of services themselves (Katon, Von Korff, Lin & Simon, 2001). In such cases when referral is necessary, Managed Care Organization (MCO) typically require primary care physicians to refer patients to a provider that is contracted with the MCO also known as “carve-out” care (Cole & Raju, 1996). However, most often carve-out care providers and primary care physicians while managed by the same MCO, work in separate facilities and have limited or strained communication. The addition of HIPPA standards and the accompanying misinterpretation of this policy have also caused many providers to air on the side of caution when communicating with other providers even when they are serving the same patient.

More recently, evidence has been presented that more intensive organized and integrative treatment plans improve outcomes for depressed patients (Katon, Robinson, von Korff, Lin, Bush, Ludman, Simon, & Walker, 1996). These models have been termed collaborative care and

integrate behavioral health care professionals into the primary medical setting to help physicians with patient education concerning depressive symptoms, symptom monitoring, and reinforcement of medication adherence (Hegel, Imming, Cyr-Provost, Noel, Arian, & Unutzer, 2002).

Collaborative care approaches have been found to be significantly associated with improved treatment adherence and recovery in primary care patients with depressive symptoms and reoccurring depression (Katon, Von Korff, Lin, Walker, Simon, Bush, Robinson, & Russo, 1995; Katon, Von Korff, Lin, et al., 1999) as well as improving patient satisfaction with treatment than when compared to usual care in the primary medical setting (Lin et al., 1999). In fact, clinical trials conducted in different primary care settings have consistently shown that patients participating in integrative treatment models experience better outcomes than those treated in usual primary care settings (Katon et al., 1995; Lin et al., 2000; Schulberg et al., 1996). The model also has been associated with reduced health care utilization costs (Von Korff, Katon, Bush, Lin, Simon, Saunders, Ludman, Walker, & Unutzer, 1998). Put together the integration of a Behavioral Health Professional (BHP) such as social worker, registered nurse, or a psychologist, into the primary medical setting has been found to improve the quality of depression care and outcomes at a reduced cost per case of depression in primary care.

Other findings also support the integration of BHPs into the primary medical setting. Survey data indicates that most primary care patients show a preference for their medical and behavioral health providers to have regular communication concerning their care (Mauksch, Tucker, Katon, Russo, Cameron, Walker, & Spitzer, 2001). Yet, traditionally medical and behavioral health care systems of service have had many barriers that impede their



communication. By integrating BHPs into the primary medical setting many of these concerns can be resolved.

BHPs can also be utilized to provide brief evidence-based psychotherapy in which physicians are most often not trained to implement (Hegel, Barrett, Oxman, 2000; Williams, Barrett, Oxman, Frank, Katon, Sullivan, Cornell, & Sengupta, 2000). Even though providing brief therapy can also be challenging in the primary care setting, it continues to be a necessary treatment option needed to be offered in the primary care setting since more than 30 percent of primary care patients cannot take or prefer not to take pharmacotherapy for the treatment of depression (Priest, Vize, Roberts, & Tylee, 1996; Brody, Khaliq, & Thompson, 1997).

#### **MEDICATION ADHERENCE**

Not surprisingly, under usual care models of primary care treatment, general medical patients have also been found to be less likely to adhere to treatment protocols for depressive symptoms (Cooper, Brown, Vu, et al., 2000). Researchers found that 28% of patients stop taking antidepressant medications within 1 month of beginning the treatment, and 44% cease treatments by 3 months (Katon et al., 1995). Katon et al. (1992) found that compliance to SSRI antidepressant treatment is higher than that of tricyclic antidepressant treatment among medical patients. Myers and Branthwaite (1992) found similar problems with antidepressant compliance among medical patients. They found that compliance after just 3 weeks average about 68% for patients being treated with antidepressants and that this rate decreased a further 50% after 12 weeks of antidepressant therapy. A mismatch between treatment method and patient treatment preferences may explain this observation. Additionally, the patient's causal attributions may also impact treatment adherence. For instance, it has been found that somatizing (medically unexplained symptoms) patients characteristically are more likely to deny any psychosocial

influences of their symptoms, resist psychiatric referrals (Craig, Boardman, Mills, Daley-Jones, & Drake, 1993), and are often obstinate to palliative and supportive medical management (Escobar, Burnham, Karno, Forsythe, & Golding, 1987). A patient's belief that their symptoms are caused by a physical condition rather than depression may be the reason for their disinclination to take antidepressants for their symptoms. These findings also provide a rationale for better understanding causal attributions of symptoms of depression and treatment preferences.

### **BURDEN OF DEPRESSION AND CHRONIC ILLNESS**

Depression and chronic physical illness have well-known burdens associated with the progression of these illnesses such as patient suffering, family distress, impaired cognitive and social functioning, and an increased risk of suicide. Recently, studies have also examined the health related functioning of patients with comorbid depression and chronic illness. The Medical Outcomes Study (1989), investigated physical functioning of patients with a variety of chronic disease conditions and found that patients with co-occurring depression and chronic illness were more functionally impaired than medically ill patients without comorbid depression. This study also revealed that patients with only depression had functioning scores that were equal to or worse than patients with coronary heart disease, hypertension, diabetes, and arthritis (Wells, Stewart, Hays, Burnam, Rogers, Daniels, Barry, Greenfield, & Ware, 1989). Koike et al (2002) also found that patients with one or more comorbid chronic medical conditions were more likely to have co-occurring depressive symptoms than patients without comorbid chronic medical conditions at 6 and 12 month follow-ups.

Approximately, 50% of those who experience an episode of major depression without a co-occurring medical condition will experience another episode, and after several such episodes

the risk of future reoccurrences exceeds 90 percent (Kupfer, Frank, & Perel et al., 1992). It is speculated that for those with co-occurring depression and chronic physical illness that these episodes may be more frequent and severe. In fact, it has been found that, the presence of comorbid depression and chronic medical illness results in amplified somatic symptoms, increased functional disability, and decreased adherence to medical regimens (Leo, Sherry, & Jones, 1998).

There are also tremendous costs associated with the treatment of depression and chronic physical illness. The direct cost to treat depression in the United States has consistently increased over the last decade. In 1990 the direct costs to treat depression was estimated to be 13 billion and in 2000 it was estimated to be 26.1 billion dollars (Greenburg, Stiglin, Finkelstein, & Berndt, 1993; Greenburg, Kessler, Birnbaum et al., 2003). When depression co-occurs with other medical conditions, the patient's adherence to the treatment regimens for both disorders is reduced and chances for improvement or recovery from either condition is diminished; health care costs are then suspected to further increase (Callahan, Kesterson, & Tierney, 1997). In addition, it has been found that health care costs in patients with depression and co-morbid physical illnesses still increase even when the chronic medical condition is controlled (Simon, von Korff, Wagner, & Barlow, 1995)

## **COMORBIDITY**

Depression also has frequent interactions with general medical conditions (Brown et al., 2001). A longitudinal study found that symptoms of depression in primary care patients could predict future episodes of low back pain, neck-shoulder pain, and musculoskeletal symptoms when compared to patients without depression (Leino & Magni, 1993). Another study demonstrated that low back pain is more than twice as likely to be reported by individuals with

accompanying depression (Croft, Papegeorgiou, Ferry et al., 1995). In addition reports of headaches, abdominal pain, joint pain, and chest complaints have all been associated with depression in primary care patients (Kroenke, Spitzer, Williams, Linzer, Hahn, deGruy, & Brody, 1994). Of particular interest to this project is the interaction between depression and chronic medical conditions. There is a considerable body of literature indicating a relationship between chronic medical conditions and depression. Depression has been found to be significantly associated with chronic illness such as cardiac disease (Carney et al., 1999); diabetes (Lustman, 1992); and HIV (Ciesla & Roberts, 2001). Moreover, many medical illnesses and the medications to treat these illnesses have also been found to produce depressive symptoms (Goldberg, 1993).

It has been speculated that depression may be a reasonable response to the loss associated with chronic physical illness and it has been indicated that the risk of depression increases as symptoms of chronic illness get worse (i.e. severity, frequency, duration, and number of symptoms). Patients with multiple chronic conditions have been found 3 to 5 times as likely to be depressed than patients without chronic conditions (Von Korff, Dworkin, Le Resche, & Kruger, 1988) and another general population study showed that individuals with chronic pain are 3 times as likely to meet formal criteria for depression than those without chronic pain (Magni, Marchetti, Moreschi, Meskey, & Luchini, 1993). In a large sample of California residents, Mills (2001) found that patients who reported having a chronic illness, scores on depression inventories were significantly higher than those who reported no chronic illness. The increased prevalence of depression among patients with chronic medical conditions may be due to several factors including: 1) depression being a risk factor for the development of chronic physical illness; 2) depression being secondary to chronic physical illnesses; 3) depression being

secondary to medications taken to treat chronic physical illnesses; or 4) the chronic illness has a direct effect on the brain causing psychotic symptoms (Katon, 2003).

Most chronic conditions require a variety of self-management behaviors to improve treatment outcomes. Depression has been shown to adversely impact self-management capabilities in many chronic physical conditions. Dimatteo et al (2000) found that the odds were three times greater for medically ill patients with depression to be non-adherent to medical treatments than non-depressed medically ill patients. A multitude of investigations have identified a broad range of determinants that may impact the medication adherence of chronically ill patients. Of particular interest to this project is the perspective described from the patient's beliefs (Becker, 1974). Particularly, the Theory of Reasoned Action posits that a patient's beliefs along several dimensions will more than likely determine their behavior, or for the purposes of this study, preference for certain treatments for their illness. The theory basically states that the beliefs and attitude about an object (treatments for depression) will impact a person's behavior (adherence) in regard to that object (Fishbein & Ajzen, 1975). Thus, the Theory of Reasoned Action suggests that if a chronically ill patient feels that their symptoms of depression are caused by their physical illness then they may be less motivated to adhere to antidepressant medications. While, others may perceive their symptoms of depression correctly, culturally they may believe that formal treatments such as antidepressants or psychotherapy may not be warranted and may prefer to seek assistance from a minister or religious leader.

As noted earlier, despite the frequency at which depression and chronic physical illness co-occur in such cases, depression typically goes unrecognized (Docherty, 1997; Zung, Broadhead, & Roth, 1993). Absent the recognition of depression in primary care patients, the symptoms of depression can not be successfully treated. However, with adequate and timely

recognition symptoms of depression in chronically ill patients has been shown to be effectively treated and aid patients in coping with their physical symptoms (Katon, 2003). For the purposes of this study, the researcher has chosen to focus on two main chronic illnesses; (1) diabetes and (2) HIV/AIDS. Studies of patients with chronic medical illnesses such as diabetes and human immunodeficiency virus (HIV) have found higher rates of depression than in patients without these illnesses (Katon, 2003).

These conditions have also been chosen for several reasons. First, these two medical conditions occur in the population of interest at higher frequencies than any other ethnic/racial group. In addition, African American and Latino patients, these two disorders are the most frequently treated illnesses in primary care practices. Second, HIV/AIDS and Diabetes have several similarities in the treatment protocols and self-management of the conditions. Early stages of both conditions sometimes can be treated with exercise and appropriate dieting. As the both conditions progress, medication often is required and if the patient fails to adhere to treatment protocols, both diseases have potential to cause other bodily organs to fail and have the potential to become terminal.

### **Rate of depression and recovery**

#### ***Diabetes***

It is estimated that approximately 170 million individuals have diabetes globally (Lin et al., 2004). This condition like most other chronic conditions is most often treated in the primary medical setting and often is comorbid with depression. Several studies have found that diabetic patients are twice as likely to have co-occurring major depression as non-diabetic patients and 11% to 15% of diabetic patients have been found to meet formal criteria for a major depressive disorder (Anderson, Freeland, Clouse, & Lustman, 2001). Studies have also found that a history

of major depression raises the risk for the development of type 2 diabetes almost twofold (Eaton, Armenian, Gallo, Pratt, Ford, 1996). However, evidence suggests that appropriate treatment of depressive symptoms can help to maintain blood sugar (glycemic control) levels and decrease the likelihood of developing diabetes (Anderson, Freedland, Clouse, & Lustman, 2001).

More than one third of insulin dependent diabetic patients are non-adherent to their medication regimens. In many of these patients it is suspected that depression may play a key role. In patients with diabetes, researchers have found that depressive symptoms are associated with failure to refill medications and decreased adherence to exercise recommendations (Ciechanowski, Katon, Russo, 2000) which are all likely to cause other organ complications that the disease is likely to impact such as the liver, heart, and kidneys. Non-adherent diabetics run the risk of kidney failure, blindness, amputation, heart problems, as well as immediate dangers of loss of consciousness and sudden death (Leventhal, Diefenbach, & Leventhal, 1992). Taken together, it should not be surprising that comorbid depression and diabetes has been found to increase health care costs and health service use (Ciechanowski, Katon, Russo, 2000; Egede, Zheng, Simpson, 2002). Like other chronic conditions, depression and diabetes have several criterion symptoms that overlap that make differentiation (sensitivity and specificity) difficult (Lustman, Griffith, Gavard, & Clouse, 1992).

### ***HIV/AIDS***

It has been recently estimated that more than 30 million individuals are living with HIV worldwide. With the social stigma, long term physical disability, and eventual death of infected individuals associated with the illness; research has become increasingly interested in the psychological adjustment of these individuals. Because depressive disorders have been closely

associated with other chronic illness and immune suppression, rates of depression among HIV infected persons has also been of considerable interest to researchers (Ciesla & Roberts, 2001).

Patients with HIV infection have been shown to have a rate of depression almost twice as high as non-HIV infected individuals (Ciesla & Roberts, 2001; Ammassari, et al., 2004) and recent data suggest that depression decreases adherence to highly active antiretroviral therapy (HAART) (Spire et al., 2002; van Servellen et al., 2002). Ammassari et al (2004) showed that depressed HIV-Infected individuals were three times more likely than non-depressed HIV-Infected persons to be non-adherent to their HIV medications. Depression has also been associated with accelerated disease progression and increased likelihood of death among HIV-Infected individuals (Ickovics, et al., 2001). Non-adherence to HIV medications may very well be the underlying mechanism for poor disease progression among depressed seropositive persons but the studies investigating this phenomenon have been cross-sectional and did not allow these inferences to be explored.

Other studies have shown that somatic symptoms also may be associated with depression among HIV-infected individuals. Perkins et al (1995) found that fatigue or insomnia in otherwise asymptomatic HIV-infected patients was related to depression rather than the physiological symptoms of the disease and suggests that HIV-infected persons who complain of fatigue and insomnia should be routinely assessed for depression. Pain symptoms have also been associated with depression in HIV-infected patients. Research suggests that like other chronic conditions, multiple pains and frequency of pain is highly associated with depressive symptoms in HIV-seropositive patients (Evans, Ferrando, Sewell, Goggin, Fishman, & Rabkin, 1998). Studies have also illustrated that HIV-patients with pain have significantly more depressive



symptoms, psychological distress, and were more hopeless than those without pain (Evans, et al., 1998; Rosenfeld, Breitbart, McDonald, 1996).

Taken together these findings indicate that depression is common among HIV positive patients and is also highly associated with pain in these patients. However, the question of comorbidity of pain, depression, and HIV is confounded by the presence of physical symptoms common to all three conditions such as disrupted sleep patterns, appetite change, and reduced activity. It is not surprising that patients may in fact attribute their symptoms of depression to the physical illness.

The following variables have also been associated with major depression in HIV-infected persons; drug use, unemployment, complicated HAART regimen, and having side effects to medications (Ammassari et al., 2004). These variables shall be considered in the demographic analysis of treatment preferences among chronically ill patients in this study.

### **Trends in Treatment**

Several studies have investigated primary care physicians' approach to the treatment of depression in the primary care setting. Some research indicates that primary care physicians may choose to watch symptoms to see if they improve on their own (watchful waiting), may treat with medication or brief psychotherapy, or may refer to specialty mental health services. However, watchful waiting and medication were reported to be used most often among primary care physicians (Anderson & Harthorn, 1989)

### ***Pharmacotherapy***

Trends in the drug treatment of depression have been driven by scientific developments. Over the past decade, there have been approximately nine new medications to treat depression have been marketed (Prozac, Zoloft, Paxil, Wellbutrin, Effexor, Lu-vox, Serzone, Remeron,

Celexa. The new drugs have been quickly adopted into medical settings because they exhibit fewer side effects than the older tricyclics; they have a simplified dosing strategy, and lower risk of patient overdose than older drugs. However these newer drugs do present with delays in their therapeutic action and some have potential for significant drug-to-drug interactions with other medications.

Pharmacotherapy is the form of treatment most often prescribed by primary care physicians for the treatment of depression in the primary care setting (Schulberg, Pilkonis, & Houck, 1998; Simon, Von Korff, Wagner, & Barlow, 1993; Williams, Rost, Dietrich, Ciotti, Zyzanski, & Cornell, 1999). Williams et al (1999) found that medication therapy was used by 84.7% of primary care practitioners and was almost twice more likely to be prescribed by female practitioners than male physicians. This may be due to the fewer side effects of the newer drugs and the reduced risk of overdose. It may also be due to the fact that randomized clinical trials of antidepressant drugs have shown that they are effective in treating the full range of severity of depressive disorders. The Depression Guideline Panel of the AHCPR performed efficacy trials of antidepressant drugs from 1975 to 1992 and found that all such medications were effective in treating depression on an outpatient basis (1993). Yet, it should be noted that these trials have only been conducted in psychiatric settings. Since most patients tend to seek services for symptoms of depression in the primary medical setting, many have questioned the application of these findings to the primary medical setting (Coyne, Klinkman, Gallo, & Schwenk, 1997; Manderscheid, Rae, Narrow, Locke, & Regier, 1993).

### ***Psychotherapy***

Developments have also occurred in the advancements of psychotherapies during this same time period of drug treatments for depression. Cognitive behavioral, interpersonal therapy,

and problem solving therapy are all structured and time limited approaches to treating affective disorders. They have been shown to be equal in efficacy to antidepressant therapy for non-bipolar mild to moderate depression (Jarrett, & Rush, 1994). These treatments have provided a valid alternative for patients who have adverse side effects to antidepressant medications, for pregnant and nursing women, or those who simply are reluctant to use such medications to treat their symptoms of depression.

This literature overview emphasizes that the depressed primary care patient presents with a potentially complex picture of overlapping medical and psychological conditions, where perceptions of their symptoms, patterns of illness behavior, and attitudes toward treatment must be ascertained, discussed, and clarified. This study seeks to explore these areas.

### **Conceptual Framework**

This study attempts to describe how chronically ill patients' conceptualize their symptoms of depression and how they make decisions about treatment for those symptoms utilizing an integrated modified version of The Self-Regulatory Model of Illness (Leventhal et al., 1992), and the Theory of Reasoned Action. Both of these models have been used in the past to study chronically ill patients' understanding of various symptoms and their likelihood of adhering to medications (Hampson, Glasgow, & Foster, 1995; Myer, Leventhal, & Guttman, 1985; Petrie, Weinman, Sharpe, & Buckley, 1996). These models were chosen based on the literature review which highlighted the primary variables involved in an individual's decision making process with regard to regimen adherence in the primary care setting.

The Self-Regulatory model of Illness has five distinct components (figure 1):

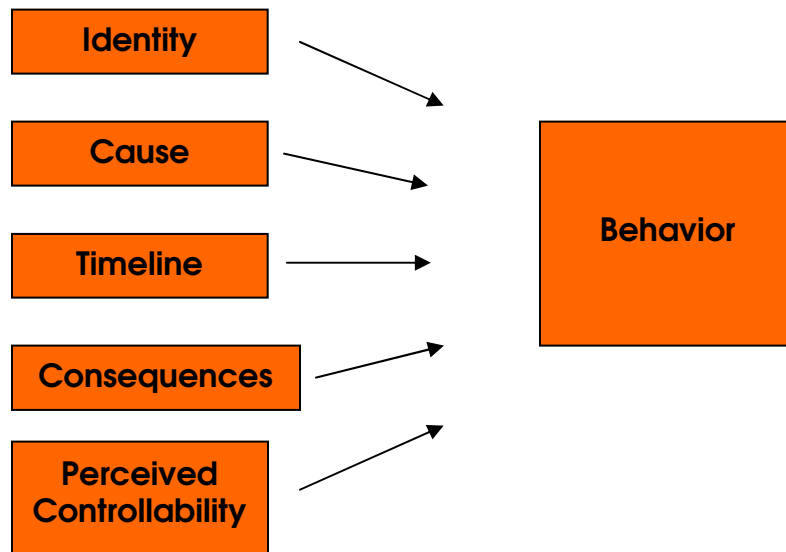
- *Identity* – the label the patient utilizes to describe their symptoms and the patient's views of what encompasses the disorder

- *Cause* – what the patient believes is the source of symptoms
- *Timeline* – how long the patient believes the illness will last (i.e. acute, chronic or recurring)
- *Consequences* – expected effects and outcome of the symptoms
- *Perceived controllability* – Whether the patient believes that the symptoms will be responsive to self regulation, professional regulation, or lay regulation.

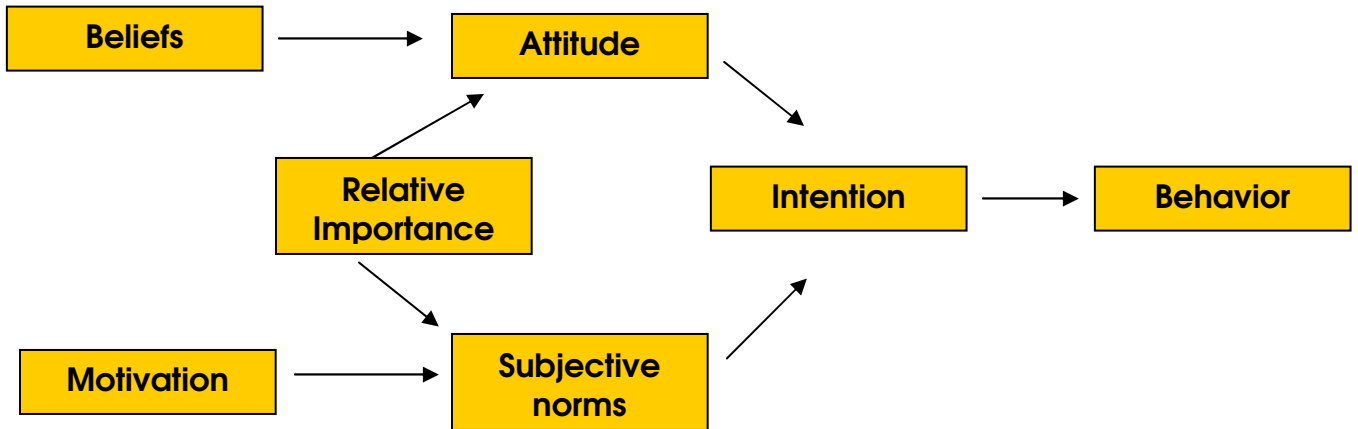
Research on the Leventhal's self-regulatory model of illness in patients with chronic physical illness such as hypertension (Myer, Leventhal, & Guttman, 1985), diabetes (Hampson, Glasgow, & Foster, 1995), heart disease (Petrie, Weinman, Sharpe, & Buckley, 1996), arthritis (Hampson, Glasgow, & Zeiss, 1994) have all suggested that how patients understand their illness has a significant impact on illness coping strategies, treatment preference and treatment adherence. However, the influence of causal attributions of symptoms has not been examined when chronic physically illness and depression are comorbid.

The Theory of Reasoned Action (Figure 2) postulates that a person's belief about an object (depression) will impact their attitudes (treatment preferences) and behaviors (treatment adherence) in regards to the object (Fishbein & Ajzen, 1975). It has been postulated that personal illness models may show promise for better understanding depressed patients' treatment related behaviors (Brown et al., 2001). This study seeks to present additional preliminary data in support of this idea. Figure 3, graphically illustrates a new theory designed to explain the process of how chronically ill patients attribute symptoms of depression and how they make decisions about which treatments they prefer for those symptoms.

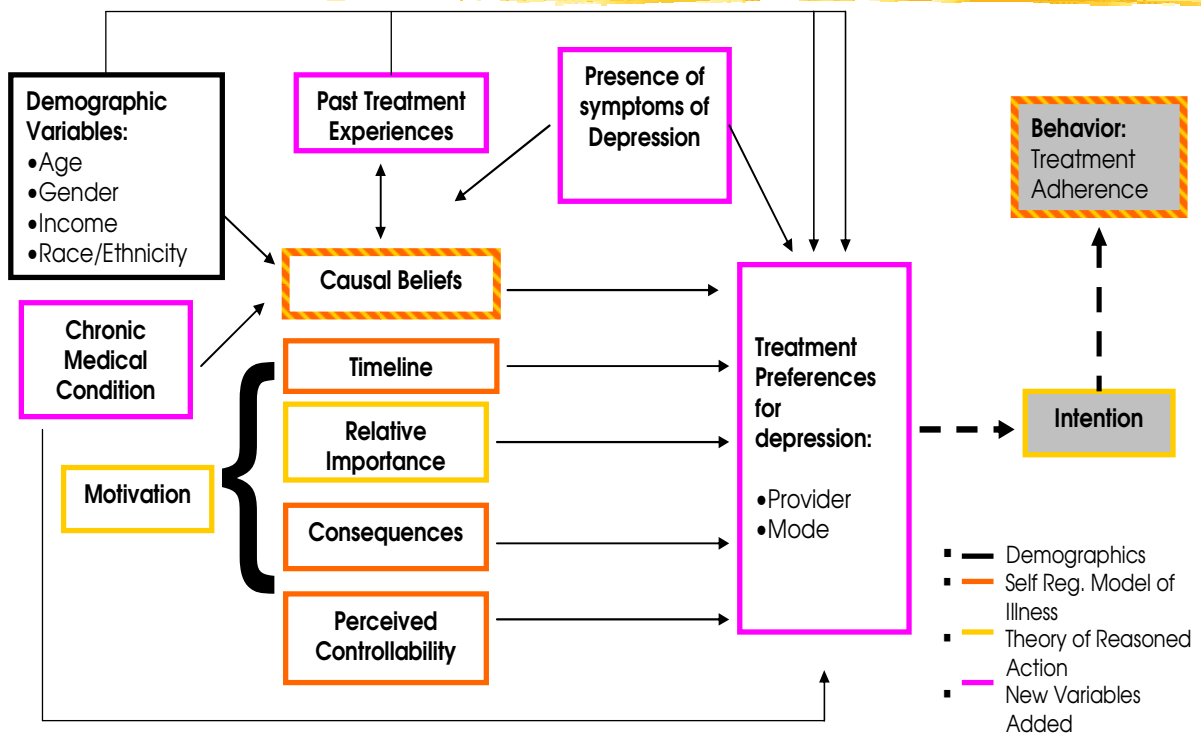
**FIGURE 2.1: SELF REGULATORY MODEL OF ILLNESS**



**FIGURE 2.2: THEORY OF REASONED ACTION**



**FIGURE 2.3: GRAPHIC ILLUSTRATION OF COMBINED MODELS**



\*Several direct paths as well as directionality of the hypothesized relationships are suppressed for model clarity.

The examination of comorbid chronic physical illness and depression does present challenges, in that many symptoms of depression and chronic illness overlap and depression itself is characterized by changes in cognitive, somatic, and affective symptoms. Another challenge is that cognitive distortions are a major component of depression, and may also be a confounding factor in a patient's perception of their symptoms (Brown et al., 2001). The severity of a patient's symptoms may be the primary influence related to how a patient will conceptualize their symptoms and how they will chose to manage them. Thus, symptom severity for both depression and physical illness will be analyzed in this study. Many studies of medically ill patients have not adequately adjusted for confounders such as severity and chronicity of illness, even though this may be the most important determinant in perception of symptoms (House, 1995; Saravay & Lavin, 1994; Simon & Katzelnick, 1997).

It is hypothesized that patient identified causal attributions of depressive symptoms will be significantly associated with treatment preferences after controlling for depressive symptom severity and past treatment history. In a related study, investigating treatment preferences of low income women, it was found that treatment preferences were highly correlated with help seeking (Scholle & Kellecher, 2003). This study attempts to add to the knowledge by investigating the relation between personal illness models (causal attributions) and treatment preferences. An important consideration in the implementation of any intervention is the belief system or preferences of the patient population (Wagner, Bystritsky, Russo, Craske, Sherbourne, Stein, & Roy-Byrne, 2005). Across theoretical models, patient beliefs and preferences have played a central role in health behavior prediction and change (Fishbein, 2000). In particular to mental health treatments, studies have shown that degree of belief in the rationale for treatment is linked to improved treatment outcomes (Addis & Jacobson, 2000). In addition, greater treatment



compliance have been shown when patients have been matched to treatments they prefer compared to those who have been randomly matched to treatments (Chilvers, C., Dewey, M., Fielding, K., et al., 2001).

## **CHAPTER 3**

### **Methodology**

#### **STUDY DESIGN**

This chapter will provide an overview and rationale of the research design used in this study and a description of the research settings. First, a review of the study design and research setting will be presented then an overview of the development of the survey and an explanation of the measurement of the variables will be discussed. Finally, a detailed description of the participants, the recruitment process, and survey administration will be summarized.

This study utilized an exploratory design and incorporates cross-sectional survey methodology with data being collected by a single survey instrument derived from other previously studied instruments. The purpose of this design was to: (1) ascertain treatment preferences for depression both by provider and mode across different ethnic groups with similar physical illness types and (2) use respondent identified causal attributions for symptoms of depression to predict treatment preferences for depressive symptoms among chronically ill patients from three ethnic groups. This study focuses on the comparison of causal beliefs/attributions of depressive symptoms and treatment preferences for those symptoms among chronically ill African Americans, Latinos, and Whites. In order to improve on the likelihood of recruiting African Americans and Latinos populations, the study was implemented across three sites in Central Austin that have traditionally served an overrepresentation of African Americans and Latinos and individuals from low socioeconomic statuses. The data was collected in the waiting areas of the participating sites. All of the sites were primary care clinics in the central Austin area. While all three sites serviced HIV seropositive individuals, one of the

sites only serviced this chronically ill population. All of the service sites had at least one behavioral health provider on staff during the time of the study and those services were made available to study participants.

The sites were easily accessible by car, bus and taxi. All of the service sites accepted all forms of medical payment including Medicare, Medicaid, HMO/managed care, private pay, as well as provided indigent services and or services on a sliding scale. The recruitment flyer posted in each of the facilities can be found in Appendix A. In addition, the use of three sites allowed for a larger number of patients to be enrolled, providing increased power to test for relationships between the variables.

### **Power Analysis**

No previous study were found that could provide an  $R^2$  value for the effect of causal beliefs on treatment preferences for depression or number of physical symptoms on severity of depression among HIV and Diabetic patients. A conservative predicted  $R^2$  value was used to obtain a sample size using Cohen's (1988) method appropriate for correlational analysis and the  $\lambda$  (lambda) table. A predicted  $R^2 = .10$  for causal beliefs and number of physical symptoms yielded an effect size of .111 if tested individually. According to Table 9.3.2 in Cohen (1988) using a desired power of .80, alpha level of  $\alpha = .05$ , and 5 independent variables, a  $\lambda$  of 13 was obtained from the  $\lambda$  table. When inserted into the equation for sample size, using the predicted effect size, an  $N = 126$  was obtained (Cohen, 1988). A sample size of 126 was adequate to test Hypotheses 5.1 and 7.1. The Power Analysis and Sample Size (PASS) software was used to estimate the power needed to detect a relationship between the variables in the remaining research questions. Research question one (1) will be analyzed using a binary logistic regression to determine the role that select variables may play in predicting causal beliefs. Each causal

belief will be dichotomized into two categorical responses; (1) Agree or (0) Disagree. Due to the exploratory nature of this research, a backward elimination likelihood ratio test will be used to analyze the relationship between each individual causal belief and the independent variables. This will be done in an attempt to better understand which of the predictors has a statistically significant relationship with the dependent variable. In the final step, this analysis provides information with regard to the contribution of only the statistically significant variables.

For the remainder of the questions, a multinomial logistic regression will be used. These analyses were chosen because each of the research questions contained a dependent variable that was either nominal or ordinal with most having multi-categorical options. Currently there is no way to predict power (a priori) for a multinomial logistic regression analysis, a power analysis for binary logistic regression was used. It was estimated that for efficient power to detect a relationship with five independent variables, the sample size for a logistic regression analysis would need to be approximately 143 participants. Therefore a sample size was set at N=175 to accommodate cases with missing data, while maintaining the necessary sample of 143 subjects to perform the logistic regression necessary for testing research questions 1-4, 6, 8.

## **PARTICIPANTS**

Approval from The University of Texas at Austin's Institutional Review Board (IRB) for the protection of human subjects was obtained. Additional approval was also obtained from the research and education committees at each of the 3 recruitment sites.

The study participants were a convenience sample of 191 patients from three service sites in the central Austin area. All the participants self-identified as having either, or both medical conditions under study in this research project (109 HIV, 79 Diabetes, & 3 Both Conditions). All participants recruited self-identified as being either HIV seropositive or Diabetic

(Participants with both illness types were also eligible for the study) and were also under receiving treatment for one or both of these conditions. The participants were all English or Spanish speaking adults between the ages of 18 and 64, a member of one of three racial/ethnic groups; (1) African American or African descent, (2) Latino descent, (3) White or Anglo-American, and were able to give informed consent. Participants were recruited through flyer postings in the service waiting areas of the three Central Austin Clinics. In addition, flyers were also given to eligible participants by the sites nutritionists or medical assistants.

## **INSTRUMENTS**

This study relied on the groupings of predictors from two conceptual frameworks; The Theory of Reasoned Action; Beliefs, Attitudes, Intentions, and behaviors (Fishbein & Ajzen, 1975) and The Self-Regulatory Model of Illness; Identity, Cause, Timeline, Consequences, Controllability, and behaviors (Leventhal et al., 1992). In the past, these theories have been used to predict behaviors or behavior change; however, for this study the combined models will be used to guide our understanding of chronically ill patients' treatment preferences for depressive symptoms and how attitudes and beliefs about their condition or symptoms may influence treatment preferences. In addition, the literature indicates that a participant's predisposing factors such as individual characteristics may influence causal attributions of symptoms of depression and treatment preferences. A portion of the variables indicated in the two theories above and the predisposing factors identified in the literature will be measured using the instruments and questions listed below.

### **Screening Questions**

Chronic medical condition and medications were assessed by patient self-report. Since this study only intended to make comparisons between chronically ill diabetic and HIV

seropositive patients, two single screening questions were developed. Patients were asked the following questions to assess the presence of HIV, Diabetes, or both:

Have you been told by a doctor or other medical professional that you have diabetes, HIV/AIDS, or both?

The response set for these screening questions included a yes/no format which was later coded as a 1 = Yes and 2 = NO, for the purposes of analysis in SPSS. There were no refusals to participate from the participating 191 individuals who both pre-signed up for the study and whom agreed to participate on the spot. However, three individuals did fail to complete several sections of the survey by refusing to answer the questions, and one individual had to withdraw due to a medical emergency.

#### **Number of Physical Symptoms or Complications of Illness**

If, respondents indicated with a check that they had either or both conditions they were then asked questions regarding physical symptoms or complications and the year they were diagnosed. The number of physical symptoms or complications of physical illness was measured by the number of physical symptoms or complications of physical illness each participant checked that was associated with the illness that they self-identified. The participant was asked to check yes or no to indicate if they had or did not have the symptoms associated with their self-identified illness. The number of symptoms endorsed was then totaled.

For patients with diabetes complications of physical illness was measure with the following questions (Joish, Malone, Wendel, Draugalis, & Mohler, 2005):

What medications are you currently taking?

The response set for this question were as follows:

0 = no medications

1 = pills only

2 = insulin

3 = both insulin and pills

4 = refused to answer\* (All refusals and blank responses were coded as a system missing)

For the next set of questions participants were asked if they had any of the following disease related complications?

Hypertension, sometimes called high blood pressure?

Retinopathy?

Amputations?

Kidney problems (such as protein found in urine) or Dialysis?

Neuropathy (pain, numbness, tingling, or paralysis) in hands feet, or toes?

The response set for each of these complications was:

1 = Yes

2 = No

3 = Refused (All refusals and blank responses were coded as a system missing)

Finally, as an indicator of severity patients were also asked:

Over the last month, what has your average self-monitory glucose level been?

The response set associated with this question was as follows:

0 = 70 to 120

1 = 120 to 180

2 = Above 180 or below 70

To measure number of symptoms endorsed among HIV seropositive participants, they were asked the following questions:

What is their current viral load,

The response set associated with this question were as follows:

0 = undetectable

1 = Detectable but less than 5,000

2 = 5,001 to 50,000

3 = <50,000

4 = Don't know my viral load (This value was coded as missing)

In addition, the following set of HIV symptom indicators were also used (International Collaboration on HIV and Cancer, 2000; Curtis, Yarnold, Schwartz, Weinstein, & Bennett, 2000; Samranayake & Homstrup, 1989; King, 1997; Justice, Holmes, Gifford, et al., 2001; Lipton & Gendelman, 1995) and were all coded with a yes/no response set:

Have you been diagnosed with AIDS?

Have you experienced any of the following HIV related complications?

Skin problems, severe rashes, or itching of the skin (HIV related cancer)?

Thrush, painful mouth, or trouble swallowing?

Pneumonia?

Neuropathy (pain, numbness, tingling, or paralysis in extremities)?

Memory loss, Dementia (ADC)?

### **Demographic Variables**

These individual characteristics also known as demographic variables were selected for this study based on the literature review. After the screening questions, the next five questions collected the demographic data of gender, age, race, education, and income. The coding of these



variables can be found in Table 4.1. In addition to the demographic variables listed above, participants were also asked about past treatment experience of depression.

### **Depression Scale**

There are a number of case-finding instruments for detecting the presence of depression in primary care settings (Mulrow et al., 1995; Whooley et al., 1997). Most of these instruments can be scored as a continuous measure of depression severity and all have cut off points by which the probability of major depression is substantially increased (Kroenke, Spitzer, & Williams, 2001). Items on these various measures tend to be highly correlated and there has been no evidence to indicate that any one of these tools is better than the others. For the purposes of this project, the presence of participant reported depressive symptoms and symptom severity was measured by the Patient Health Questionnaire Depression Scale (PHQ-9). The PHQ-9 is a 9-item scale presented in multiple choice format which purports to measure presence and degree of depression in adults. Each of the 9-items of the PHQ-9 attempts to assess a specific symptom. The Patient Health Questionnaire Depression Scale is a tool used to assess the presence and severity of symptoms of depression in accordance with the Diagnostic and Statistical Manual of Mental Disorders, fourth addition (DSM-IV). The scale has 9 questions that are assessed on a 4 point scale (See Appendix C). The standard cut-offs are as follows: 0-4 indicates no depression, 5-9 indicates mild depression, 10-14 indicates moderate depression and 15 or above signifies severe depression. Higher total scores indicate more severe depressive symptoms. The dimensions assessed are cognition and motivation. The PHQ-9 is half the length of many other depression scales and has been shown to have comparable sensitivity and specificity (Spitzer, R.L., Kroenke, K., & Williams, J.B.W., 1999). One previous study showed

that it had high sensitivity (82%-90%) and specificity (84% to 89%) for identifying diabetic patients with depressive disorders (Lustman, Clouse, Griffith, Carney, & Freedland, 1997).

Although the Beck Depression Inventory (BDI) has also been shown to be effective at identifying depression in HIV patients, studies also suggest that the reliance on physical symptoms by the BDI has the potential to artificially inflate depressive scores (Kalichman, Rompa, & Cage, 2000; Kalichman, Sikkema, Somlai, 1995) among individuals with chronic physical illnesses. Since, the study focuses on chronically ill patients whom are likely to have many somatic complaints, the PHQ-9 was selected by the researcher as the better tool for use in the research setting. The PHQ-9 also enables the researcher to analyze individuals with subclinical depression. Research indicates that individuals with subclinical depression are more likely to seek treatment in the primary medical settings rather than specialty mental health settings (Jaffe, Froom, & Galambos, 1994; Wells, Stewart, Hays et al., 1989) and that this group is likely to have poor functioning status, more somatic symptoms, more visits to the primary medical physician and emergency department, and perceived as more difficult to care for by their primary care physician than patients with no depressive symptoms (Brody, Hanh, Spitzer, Kroenke, Linzer, deGruy, & Williams, 1998). Thus the researcher has chosen to include individuals with no depression, subclinical/minor depression, and major depression as comparison groups for this study. First it is suspected that variations in depression scores are likely to impact causal attributions and treatment preferences. Secondly, limiting the study to only individuals meeting diagnostic criteria for major depression would exclude the majority of individuals seeking assistance for symptoms in the primary medical sector. It is important to realize that even though some minor symptoms of depression may resolve without treatment, others have the potential to progress to a more serious nature or full disorder, are often associated

with functional impairment, and have been found to respond to both antidepressant and psychotherapeutic treatments (Well, Stewart, Hays, et al., 1989).

### **Illness Perception Questionnaire**

The second part of the questionnaire will be questions developed from a pilot study investigating illness perception models of primary care patients. The IPQ has five subscales that were designed to assess illness identity: cause, timeline, consequences, perceived controllability and coherence. Scale items are scored on a 4-point (all of the time to never). The evidence from studies to date provide quantitative support for the structural relationship between the five components of illness representation described by Leventhal's Self-Regulatory Model of Illness (1992) and for the expected links between illness cognitions and medication adherence (Cooper et al., 1999; Weinman et al., 2000).

Several items were added to the original illness identity subscale to assess the frequency of depressive symptoms. These particular items were incorporated because they are the most commonly reported symptoms of depressed patients and are included in the DSM-IV criteria for major depression or dysthymia (Brown et al., 2001). These items included such symptoms as: little interest or pleasure in doing things; feeling sad or depressed; thoughts of death or suicide; trouble concentrating or making decisions. Seven items were also added to the cause subscale to assess respondents' perceived cause of depressive symptoms. These items assessed psychological factors, interpersonal loss and medical factors as perceived cause of depressive symptoms. Finally, one item was added to the controllability subscale to assess religious faith as a way of managing depressive symptoms.

For the Illness Perception Questionnaire, if depressive symptoms were acknowledged (items 1-6, 13-16) by the participant, these items were later provided back to the participant on a

laminated sheet for them to reference with regard to the remaining questions in the instrument., The participants were also provided with a set of response cards that corresponded to the various sections of the IPQ. For those patients who did not endorse depressive symptoms they were still given the IPQ (IPQ no sx), which differed only in the wording of the instructions. These individuals were given the laminated cards with all of the depression symptoms marked and asked what they felt would cause the symptoms indicated on the sheet. The second part of the IPQ asked questions in regards to what the participant believed caused symptoms of depression. These causal beliefs were analyzed as the dependent variable to determine which factors predicted causal beliefs and in the second set of analyses the pattern of causal beliefs will be used to predict treatment preferences.

This instrument was used to assess participant reported causal attributions of depressive symptoms. As reported in a pilot work (Brown, et al, 2001), these questions are a revised version of the Illness Perception Questionnaire (IPQ) developed by Weinman and colleagues (1996) with the addition of questions subsequently added by Moss-Morris et al., (2002). The items added by Moss-Morris et al., (2002) are included in the questionnaire (IPQ-R) and are indicated by an asterisk (see Appendix C). The causal subscale of the IPQ-R, asks 27 possible causes of symptoms. For this study, participants were given a list of causes and were asked which they believed caused symptoms of depression. The causal beliefs are as follows:

1. A germ or virus caused my symptoms of depression
2. Diet played a major role in causing my symptoms of depression
3. The death of a loved one caused my symptoms of depression
4. Pollution of the environment caused my symptoms of depression
5. My symptoms of depression are hereditary-they run in my family.
6. My symptoms of depression are due to my medical illness
7. I have these symptoms of depression because I don't take care of myself physically.
8. It was just by chance I developed these symptoms of depression
9. My symptoms of depression are a punishment from God.

10. Stress was a major factor in causing my symptoms of depression
11. Marriage or relationship problems led to my symptoms of depression
12. My symptoms of depression are mostly due to my own behavior
13. Other people played a large role in causing my symptoms of depression
14. My symptoms of depression were caused by poor medical care in the past
15. My symptoms of depression are a reaction to a medical illness
16. My state of mind played a major part in causing my symptoms of depression
17. My lack of spiritual faith caused my symptoms of depression
18. The loss of a significant relationship caused my symptoms of depression
19. My negative thinking caused my symptoms of depression
20. Family problems or worries caused my symptoms of depression
21. My personality caused my symptoms of depression
22. My emotional state (e.g. feeling down, lonely, anxious, empty) caused my symptoms of depression
23. Being overworked played a major role in causing my symptoms of depression
24. My symptoms of depression are due to me getting older
25. My symptoms of depression are due to smoking
26. My altered immunity caused my symptoms of depression
27. It was an accident or injury that caused my symptoms of depression.

### **Treatment Preferences**

Treatment preferences were evaluated by asking participants a single question:

“Off the top of your head, if you were depressed and you had your choice of treatment and provider which **ONE** of each would you prefer?”

Participants were asked which treatment option they would prefer for the treatment of symptoms of depression. Based on each individual option a set of providers were provided to the participant that could feasibly provide that treatment for them. If an individual indicated that they would prefer medication then the provider options were a doctor, nurse practitioner, or a psychiatrist. For the counseling preference, the provider options were a doctor, minister, nurse practitioner, psychiatrist, psychologist, or social worker. For individuals who indicated a preference for combination treatment, they could indicate one provider from the first set of providers who could provide medication treatment and choose one provider from the second set of providers who could provide counseling. Based on new trends in treatment available to

primary care physicians with regard to Problem Solving Therapy, combined treatment will used as the reference category in analyses utilizing this variable.

These responses options were modified from a study by Dwight-Johnson et al. (2000) that originally only included five options: (1) Free medication daily for 6 months, which often causes nausea and headaches; (2) Medication daily for 6 months, no or minor side effects such as headaches and dry mouth, cost \$80/month (\$480 total); (3) Individual counseling 1 hour per week for 6 months, \$30 dollars a session (\$720 total); (4) Group counseling 1 hour per week for 6 months, costs you \$25 per session (\$600); (5) wait and see. These response options were modified due to concerns regarding the complexity of the answer choices that would require each participant to have a certain degree of prior knowledge concerning treatment effectiveness and costs. In addition, the provider preferences were not a part of the options provided by Dwight-Johnson et al. (2000), but were added to ascertain provider preferences for this research study. Provider preferences were added based on some research which suggests that individuals of African American and Latino descent in the general population show a preference to seek assistance for their symptoms of distress from religious or spiritual leaders (Cooper-Patrick, Neil, Powe, Jenckes, Gonzalez, Levine, & Ford, 1997). The researcher sought to answer the research questions; Are there differences in provider preference across ethnicity when a chronic illness is present?

## **QUESTIONNAIRE ADMINISTRATION**

Although the data could be collected in a self-report format, in this study the scale was used as a structured interview guide with the participant. This data collection format was chosen over the self-report format to increase response rates among the participants. Participants self-selected during the enrollment days based on inclusion criteria listed on the recruitment flyers in

the participating service sites. These criterion included being between the ages of 18 and 64, self-identified as having diabetes, HIV, or both, and able to consent to participate in the study. The researcher did not have access to any of the participant health records. All questionnaires were completed in the designated areas provided by the service sites before the patient's scheduled appointment; individuals who were unable to complete the survey prior to being called for their appointment were allowed to complete the survey after their appointment. The purpose of the study and the consent form which included risks or potential discomfort, as well as the participants' right to refuse to participate or withdraw without penalty, were reviewed with all of the participants prior to their enrollment in the study. The informed consent also reviewed issues regarding confidentiality and the potential to provide feedback to the researcher.

Once the subject self-selected and the research criterion was discussed, then the potential participant was directed to the interview room by one of the research staff. At that time, the prospective participant would be informed of the purpose of the study and informed consent would be reviewed; if signed by the prospective participant then they would be further screened with the Diabetes and HIV screening questions. On average, this process and the actual interview took approximately 45 minutes to complete with most participants completing the survey prior to being called for their appointment. Each subject was paid \$10.00 dollars in recognition of their time in participating in this study.

As a part of the interview guide, respondents were administered the PHQ-9 which is an instrument designed to measure depression. If, respondents scored higher than 15 or responded positively to question 9 on the PHQ-9 (Thoughts that you would be better off dead, or of hurting yourself in some way) the onsite behavioral health provider was paged to the interview room and the participant was assessed by the behavioral health provider.

## **Interviewer Training**

Along with the principle investigator, there were two Spanish-English speaking interviewers in this study. Interviewers for this study were required to complete the human subjects training through The U.S. National Institute of Health called the human participant protections education for research teams. In addition, interviewers were trained specifically how to anticipate and answer questions of potential interviewees. The researcher and the other interviewers were also trained not to discuss the types of treatment choices beyond what was presented on the instrument or the potential effectiveness of those treatment choices with the participants. This was put into practice to allow participants to provide their preferences for treatment without manipulation or bias by the research staff or the literature. All data was gathered in face-to-face interviews with the participants. During interviews, some subjects did request more information with regard to which choice the interviewers felt were best for the treatment of depression but the interviewers were instructed to tell the participants that their preferences were the interest of the current study, no popular opinion.

Signed informed consents were kept separately from the collected data. Each participant was assigned an identification number that was not linked to the participant's name. The ID number was only used to track responses on the different parts of the questionnaire for statistical analysis purposes. Once a particular participant agreed to participate, individual responses could no longer be associated with signed consent forms. Data was entered into the Statistical Package for the Social Sciences for Windows version 15 (SPSS 15). In order to make additional provisions to protect participant confidentiality, after the questionnaires were entered into the SPSS software, they were placed in a locked file cabinet in the researcher's office and will



remain in the researcher's possession in a locked file cabinet until completion of the study and subsequent write-ups. After which, the questionnaires and consent forms will be shredded.

As noted, statistical analyses were carried out using SPSS 15 for Windows. In the first analysis the "cause" subscale items on the IPQ-R were entered individually as the dependent variable into a logistic regression analysis. In subsequent analyses, the 'cause' subscale was entered into a factor analysis to identify groups of causal beliefs that made up factors and then those factors were used in a multinomial logistic regression analysis to estimate the individual factors prediction ability on treatment and provider preferences.

This study tested eight (8) main research questions which were generated based on previous literature in the primary care population but also were designed to build on gaps in the literature. The research questions are listed below:

- Q<sub>1</sub>: Among individuals with the same illness type, which predictors impact causal beliefs?
- Q<sub>2</sub>: Among individuals with the same illness type, are there differences in treatments preferences for depressive symptoms across ethnicity?
- Q<sub>3</sub>: Among individuals with the same illness type, are their differences in provider provider preferences for the treatment of depressive symptoms across ethnicity?
- Q<sub>4</sub>: Among individuals with the same illness type, does the number of physical symptoms of physical illness impact how patients attribute symptoms of depression?
- Q<sub>5</sub>: Among individuals with the same illness type, does the number of physical symptoms of physical illness impact depression?
- Q<sub>6a</sub>: Among individuals with the same illness type, which pattern of causal beliefs for the symptoms of depression best predicts treatment preferences (mode) for depression?
- Q<sub>6b</sub>: Among individuals with the same illness type, which causal beliefs for the symptoms of depression best predict provider preferences for depression?

- Q<sub>7</sub>: Among individuals with the same chronic illness, are there differences in depression scores across ethnicity?
- Q<sub>8</sub>: Are there differences in treatment preferences (mode) for depression care across illness types?

Binary logistic regression was used to evaluate research question one (1) and multinomial logistic regression analysis was conducted to evaluate the remaining research questions. In all of the analyses except research question 4, race/ethnicity, PHQ score, age, gender, education, or income were entered as predictor variables. In research question 4 the only predictor was illness type. A binary and multinomial logistic regression analyses are useful in assessing the relationship between a categorical dependent variable that and multiple independent variables (Hosmer & Lemshow, 2000). In the multinomial logistic regression analysis, multiple groups are compared through a combination of binary logistic regressions. The beta coefficients and their corresponding odds ratios are generated as well. The overall test of relationships among the independent variables and groups defined by the depended variable is decided by the reduction in the likelihood values between the model which does not include any independent variables and the model that holds the independent variables. The difference in likelihood is referred to as the model chi-square. The significance test for the final model chi-square indicates the presence of a relationship between the dependent variable and the combination of independent variables (Hosmer & Lemshow, 2000).

## **CHAPTER 4**

### **Data Analysis**

The purpose of the current project was to determine the causal beliefs that individuals with HIV or Diabetes assigned to symptoms of depression. Second the project sought to determine if there were differences in treatment preferences (mode and provider) for depression across ethnicity within similar illness types. The project also sought to ascertain if the number of physical symptoms related to medical illness impacted causal attributions about symptoms of depression or depression scores. Next the project explored if the causal beliefs for the symptoms of depression held by chronically ill individuals predicted treatment preferences. Additionally, the project investigated if differences in depression scores across ethnicity remained when a chronic illness was present. Finally, the project evaluated differences in treatment preferences and provider preferences across illness type. The results of these research questions will be presented in this chapter. However, first this chapter will begin with a review of the sample and then proceed with a presentation on the data management and descriptive statistics of the demographic information of the participants. This section will be followed by the results of the research questions.

This study consisted of a convenience sample of 109 HIV seropositive individuals, 79 diabetics, and 3 patients that identified as having both conditions. The participants were between the ages of 18 and 64 and they self-selected to participate in the study based on study criteria for inclusion. All of the participants were either English or Spanish speaking individuals recruited from one of three service sites in the Central Austin Area. There were no refusals to participate among the 191 individuals self-selected. However, one individual withdrew due to an inability

to complete the survey because of a medical emergency. Three more surveys were also eliminated from the analysis because after starting the interview the participants chose not to answer several parts of the survey. Finally, the three participants that identified as having both HIV and Diabetes were later eliminated from the studies analyses because there were not enough dually diagnosed (HIV and Diabetes) subjects to analyze the data.

## **DATA MANAGEMENT**

First, surveys were reviewed to make sure each page listed the participant identification number. While the pages were being reviewed for ID numbers, legibility, completeness, and adherence to the eligibility criteria listed in the study protocols were also checked. Surveys were also reviewed for missing data. Only one survey was thrown out based on missing data. This subject was unable to complete the interview due to a medical emergency and it was later decided that there was not enough information obtained to analyze the research questions so this particular survey data was excluded.

A codebook was developed to assign numerical coding of the original response options. Each non-continuous variable was given numerical codes for each of the possible indicators of the variable. Dicotomous responses were coded numerically with a “1” or “2”. Once the data was appropriately coded, it was entered into an Excel data file. Table 4-1 presents the coding of the variables entered into the analyses. The data was entered twice into two different Excel spreadsheets and cross checked against one another for accuracy (Tabachnick and Fidell, 2001); any inconsistencies were reviewed and re-entered. This process continued until both files were consistent. Once this process was complete then the data was transferred into a SPSS data file.

**Table 4-1. Measurement and Coding of All Variables Used**

<b>Variable</b>	<b>Coding</b>
<b>Dependent Variables</b>	
Provider Preference	1= Doctor/Nurse Practitioner 2= Psychologist/Psychiatrist 3= Social Worker 4= Spiritual Leader 5= Provider Combination 6= No Treatment
Provider Recode	1= Doctor/NP 2=Psychologist/Psychiatrist 3= Social Worker 4= Provider Combination
Treatment Modal Preference	1= Medication 2= Counseling 3= Combination Treatment (Medication and Counseling) 4= No Treatment
Causal Beliefs	Dichotomous 1= Agree 0= Disagree

<b>Independent Variables</b>	<b>Coding</b>
Level of Education	1= Less than high school 2= High school graduate/GED 3= Some college 4= College Graduate
Education recode	1= Less than high school diploma 2= High school graduate or more
Age	1= <30 2= 30 – 39 3= 40 – 49 4= 50 – 59 5= >=60 6= Refused
Age recode	1=<50 2= 50 years or older 3=missing
Gender	1= Female 2= Male
Income	1= 0 – 9,999 2= 10,000 – 19,999 3= 20,000 – 29,999 4= >=30,000 5= Refused
Income recode	1=< 10,000 2= 10,000 or more 3=missing
PHQ Score	1= No Depression 2= Mild Depression 3= Moderate/Severe Depression
Race/Ethnicity	1= African American 2= Latino 3= White

Descriptive statistics and graphic illustrations were obtained of the data file (Tabachnick and Fidell, 2001). These statistics were used to check for any logical inconsistencies, values outside the expected ranges, and accuracy of the data. In addition, frequency tables and histograms were examined for normal curve distributions. Based on research texts (Hosmer & Lemeshow, 2000; Tabachnick and Fidell, 2001), crosstabs along with chi-square tests were run to ensure that the expected frequencies were adequate to run binary and multinomial logistic regression. Each of the independent variables (controls and predictor) were entered into tables with the outcome variables (treatment preferences: Provider and Mode). Some of the cells in the table did not meet the assumption that no more than 20% of the cells have an expected frequency of fewer than 5 and 1 (Tabachnick & Fidell, 2001). Based on this violation, age, income, and education were dichotomized based on their mean and PHQ score were recoded into ranges and labeled according to the range. In addition, provider preference was recoded based on responses of the participants. A total of 3 participants indicated a preferences for a spiritual leader and thus this option was later set to missing (see Table 4.1).

#### **DESCRIPTIVE STATISTICS OF THE SUBGROUPS**

The following demographic variables were included in this study: age, gender, education level, income, and race/ethnicity. The first five demographic variables were used as controls in the analyses and race/ethnicity was used as a predictor variable in several of the analyses.

#### ***HIV***

As shown in Table 4-2, 74.5% of the participants that were HIV seropositive were male, while 24.5% of the HIV subsample were women. With regard to level of education, approximately 42% of the HIV subsample reported having some college, 21% reported having less than a high school diploma, and 27.6% reported having obtained their high school diploma



or GED. The majority (76.4%) of the HIV subsample reported earning less than \$10,000 dollars a year, 17.9% reported making between \$10,000 and \$19,999 per year and the remaining 5.4% reported making at least \$20,000 or more a year. Although, logistic regression and multinomial logistic regression, the primary data analyses chosen for this study, have no assumptions about normality, linear relationships or equal variances within groups for the predictor variables (Tabachnick & Fidell, 2001), age and PHQ Score were examined for normal distributions using visual shape of the distribution, skewness, and kurtosis values obtained from the SPSS frequency distributions (see Table 4-3). Neither of these variables revealed problems with skewness or kurtosis based on the +/- 1.00 criterion. The mean age of the HIV subsample was 45.51 and 54.8% of the subsample was between the age 40 and 49. Finally, scores on the depression index were spread fairly even with 27.4% having scores signifying no depression, 21.7% with scores indicating mild depression, 24.5% with scores demonstrating moderate depression, and the remaining 26.5% with scores indicative of severe depression. The ethnic/racial composition of the HIV subsample was 47.1% African American, 30.8% Latino, and 22.1% White.

### ***Diabetes***

Table 4-4, illustrates the demographic characteristics of the Diabetes subsample. The Diabetic subsample was majority female (64.1%) and 35.9% male. The largest percentage of the diabetic subsample reported having less education than a high school diploma (41%), 35.9% reported receiving their high school diploma/GED, 20.5% reported having attending some college and the remaining (2.6%) stated that they had obtained college degrees. Approximately 93.6% of the sample reported making annual incomes less than \$30,000 dollars a year with a majority (47.4%) of those making between 0 and \$9,999 dollars annually. As noted above, multinomial logistic regression, the primary data analysis chosen for this study, has no

assumptions about normal distributions, linear relationships or equal variances within groups for the predictor variable (Tabachnick & Fidell, 2001), however, age and PHQ Score were examined for normal distributions using visual shape of the distribution, skewness, and kurtosis values obtained from the SPSS frequency distributions (see Table 4-5) and neither of these variables displayed problems with skewness or kurtosis based on the +/- 1.00 criterion. With regard to age, the diabetic participants tended to be slightly older than the HIV subpopulation (mean = 47.86) with the majority (35.9%) reporting ages between 50 and 59. Depression scores for this subsample seemed evenly dispersed across the cutoff scores. Approximately 27% of the sample scores signified no depression, another 27% obtained a score that was indicative of mild depression, 20.5% retained scores that were implied moderate depression, and the final 25.6% reported indicators that were indicative of severe depression. Finally, ethnic/racial composition of the diabetic subsample was 30.8% African American, 52.6% Latino, and 16.7% White.

**Table 4-2. Demographic Characteristics of the HIV Subsample (N =106)**

<b>Demographic Characteristic</b>		<b>N</b>	<b>Valid %</b>
<b><i>Gender</i></b>			
Male		79	75.2
Female		26	24.8
Missing		1	.9
<b><i>Level of Education</i></b>			
Less than high school		22	21
High school graduate/GED		29	27.6
Some college		54	41.9
College Graduate		10	9.6
Missing		1	.9
<b><i>Age</i></b>			
<30	mean=44.34	7	6.7
30 – 39	median=45	19	18.3
40 – 49	sd=8.234	57	54.8
50 – 59		19	18.3
60+		2	1.9
Missing		2	1.9
<b><i>Income</i></b>			
0 – 9,999		81	76.4
10,000 – 19,999		19	17.9
20,000 – 29,999		3	2.8
> =30,000		3	2.8
<b><i>PHQ Score</i></b>			
No Depression	mean= 10.13	29	27.4
Mild Depression	median= 9	23	21.7
Moderate Depression	sd= 7.1	26	24.5
Severe Depression		28	26.5
<b><i>Race/Ethnicity</i></b>			
African American		49	47.1
Latino		32	30.8
White		23	22.1
Missing		2	1.9

**Table 4-3. Distributions for Select Variables (HIV Subsample N=106)**

<b>Variable</b>	<b>Mean</b>	<b>SD</b>	<b>Actual Range</b>	<b>Score Range</b>	<b>Skewness</b>	<b>Kurtosis</b>
<i>Age</i>	44.34	8.234	22-64	43	-.289	.373
<i>PHQ Score</i>	9.62	6.439	0-27	27	.553	-.514

**Table 4-4. Demographic Characteristics of the Diabetic Subsample (N= 78)**

<b>Demographic Characteristic</b>	<b>N</b>	<b>Valid %</b>
<b><i>Gender</i></b>		
Male	28	35.9
Female	50	64.1
<b><i>Level of Education</i></b>		
Less than high school	32	41
High school graduate/GED	28	35.9
Some college	16	20.5
College Graduate	2	2.6
<b><i>Age</i></b>		
<30	8	10.3
30 – 39	9	11.5
40 – 49	21	26.9
50 – 59	28	35.9
60+	12	15.4
<b><i>Income</i></b>		
0 – 9,999	37	47.4
10,000 – 19,999	19	24.4
20,000 – 29,999	17	21.8
> =30,000	5	6.4
<b><i>PHQ Score</i></b>		
No Depression	21	26.9
Mild Depression	21	26.9
Moderate Depression	16	20.5
Severe Depression	20	25.6
<b><i>Race/Ethnicity</i></b>		
African American	24	30.8
Latino	41	52.6
White	13	16.7

**Table 4-5. Distribution for Select Variables (Diabetes Subsample N=78)**

<b>Variable</b>	<b>Mean</b>	<b>SD</b>	<b>Actual Range</b>	<b>Score Range</b>	<b>Skewness</b>	<b>Kurtosis</b>
<i>Age</i>	47.86	11.266	25-64	40	-.505	-.787
<i>PHQ Score</i>	9.62	6.439	1-26	25	.460	-.808

### **MULTIVARIATE ANALYSES**

There were eight research questions under analysis in this study. Each of the research questions contained a dependent variable that was either nominal or ordinal with most having multi-categorical options. Therefore, the methods chosen for hypothesis testing was binary logistic regression and multinomial logistic regression (Hosmer & Lemeshow, 2000). The significance level of  $p \leq .05$  was used to evaluate the overall model and the individual relationships between the independent and dependent variables. For the first research question, a backwards elimination logistic regression analysis was used to test the research question. A backward elimination likelihood ratio test will be used to analyze the relationship between each causal belief and the independent variables. This will be done in an attempt to better understand which of the predictors has a statistically significant relationship with the dependent variable. In the final step, this analysis provides information with regard to the contribution of only the statistically significant variables.

For the remaining research questions, a hierarchical approach was used for controlling the effects of the demographic variables (age, gender, income, education) and PHQ score. In the first step the control variables were entered and in the second step the predictor variable would

be entered if it added statistically significant effects to the model. This approach was used to produce a final model that would determine if the main predictor variable added effects after holding all the other variables constant. This model also determines the effect of each independent variable on the dependent variable.

### *Question 1*

Q<sub>1</sub>: Among individuals with the same illness type, which predictors impact causal beliefs?

For this question, chronically ill patients were presented with 27 questions about what they believed caused (see Appendix C: IPQ “cause subscale”) their self-identified symptoms of depression. This question was analyzed separately for both of the illnesses (HIV & Diabetes) explored in this study. Each of the 27 causal beliefs were coded into “0” or “1” with agree coded as 1 and disagree coded as 0. Then each causal belief was entered into a backward elimination logistic regression to identify which variables best predicted individual causal beliefs.

Within the HIV subsample, 16 of the causal beliefs revealed no significant relationship with the predictor variables entered into the analysis and 11 causal beliefs were found to have a statistically significant relationship with one or more of the predictor variables. Table 4.6 reports the 11 causal beliefs and their associated statistically significant predictors. The complete table that lists the statistical results for all of the variables is in Appendix D.1 through D.11. A criterion for statistical significance of .05 was employed for each of the tests. The logistic regression coefficient, Wald test, and odds ratio for each of the statistically significant relationships between causal beliefs and the predictors are described below and presented in Tables 4.7 to 4.17.

**Table 4.6. Relationship between Individual Causal Beliefs and the Predictor Variables  
(HIV subgroup N= 106)**

	<u>Predictor Variables</u>					
<u>Causal Belief</u>	Age	Education	Income	Gender	PHQ	Race/Ethnicity
1. A germ or virus caused symptoms of depression					✓	✓
2. The death of a loved one caused my symptoms of depression						✓
3. My symptoms of depression are hereditary					✓	✓
4. My symptoms of depression are due to a medical illness	✓				✓	
5. Stress was a major factor in causing my symptoms of depression						✓
6. My symptoms of depression were caused by poor medical care in the past						✓
7. My symptoms of depression are a reaction to my medical illness					✓	
8. The loss of a significant relationship caused my symptoms of depression					✓	
9. My negative thinking caused my symptoms of depression					✓	
10. My emotional state caused my symptoms of depression					✓	
11. My altered immunity caused my symptoms of depression					✓	

The first belief, “A Germ or Virus caused [their] symptoms of depression,” had a statistically significant relationship with the predictor variables PHQ score and race/ethnicity. Race/ethnicity produced a Wald value,  $X^2 = 6.899$ ,  $p=.032$  (see Table 4.7). Based on the parameter estimates of the reduced model, the odds ratio for race/ethnicity indicates that when



holding all other variables constant, Latinos were 5 times more likely than Whites to agree that “A Germ or Virus caused symptoms of depression.”

In addition, PHQ produced a final Wald value,  $X^2 = 8.078$  that was statistically significant at the  $p \leq .05$  (see Table 4-7). Based on the parameter estimates of the reduced model and inverting the odds ratio for PHQ score, Individuals with severe depression were 4 times more likely than individuals with no depression to agree that “A germ or virus caused [their] symptoms of depression.”

**Table 4-7. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “A Germ or Virus caused symptoms of depression,” and the independent variables PHQ and race/ethnicity (HIV subsample N = 106)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Ethnicity</b>		<b>6.899</b>	<b>.032*</b>	
African Americans	.221	.143	.706	1.248
Latinos	1.637	5.351	.021*	5.140
<b>PHQ Score</b>		<b>8.078</b>	<b>.018*</b>	
No Depression	-1.461	5.034	.025*	.232
Mild Depression	.003	.000	.996	1.003

\* $p \leq .05$ , \*\*  $p \leq .01$

The second was the belief that “The death of a loved one caused my symptoms of depression,” produced a statistically significant relationship with the predictor variable race/ethnicity. Thus the null hypothesis that no relationship exists between the predictor variable and the dependent variable is rejected. For this belief, the results of the reduced model, race/ethnicity yielded a Wald value,  $X^2 = 4.857$ , which was statistically significant at the  $p \leq .05$  criterion level (See table 4-8). This result showed that parameter coefficients for the independent variables race/ethnicity were not zero as suggested by the null hypothesis. In the parameter estimates of the reduced model and an inversion of the odds ratio, Whites were 3 times more likely than African Americans to believe that “The death of a loved one caused [their] symptoms of depression.”

**Table 4-8. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “The death of a loved one caused my symptoms of depression,” and the predictor variable race/ethnicity (HIV subsample N = 106).**

Predictor	<u>B</u>	<u>Wald (<math>X^2</math>)</u>	<u>p</u>	<u>Odds Ratio</u>
<i><b>Ethnicity</b></i>		<b>4.857</b>	<b>.088</b>	
African Americans	-1.099	4.120	.042*	.333
Latinos	-1.099	3.463	.063	.333

\* $p \leq .05$ , \*\*  $p \leq .01$

The belief that “Symptoms of depression are hereditary,” produced a statistically significant relationship with the categories associated with race/ethnicity. Race/ethnicity produced a Wald value,  $X^2 = 5.752$  with an associated  $p = .056$ , which slightly missed the  $p \leq .05$  criterion level. Based on the parameter estimates of the reduced model, an inverted odds ratio revealed that, Whites were 5 times more likely than Latinos to agree that their “Symptoms of

depression are hereditary.” In addition, PHQ produced a Wald value,  $X^2 = 5.718$  with an associated  $p = .057$ . Again, interpretation proceeds with cautionary note that will be further discussed in the next chapter. Based on the parameter estimates and an inversion of the odds ratio, Individuals with severe depression were 3.44 times more likely than individuals with mild depression to believe that their “Symptoms of depression are hereditary” (see Table 4-9)

**Table 4-9. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “My symptoms of depression are hereditary” and the predictor variables race/ethnicity and PHQ (HIV subsample N = 106).**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Ethnicity</b>		<b>5.752</b>	<b>.056</b>	
African Americans	-.893	2.167	.141	.409
Latinos	-1.684	5.628	.018*	.186
<b>PHQ Score</b>		<b>5.718</b>	<b>.057</b>	
No Depression	-1.356	3.594	.058	.258
Mild Depression	-1.239	4.632	.031*	.290

\* $p < .05$ , \*\*  $p < .01$

The next belief that produced statistically significant relationship with one or more of the predictor variables was the belief that “symptoms of depression are due to [my] medical illness.” The null hypothesis is thus rejected, which states that no relationship existed between the individual causal belief and any of the predictor variables. The predictor variables that produced a statistically significant relationship with the belief that “symptoms of depression are due to [my] medical illness,” are age and PHQ score. Age produced a Wald value,  $X^2 = 4.599$ ,  $p = .032$  (see Table 4.10) and based on the parameter estimates of the reduced model and an inversion of the odds ratio, individuals who were older than 50 years of age were 3.15 times more likely than

individuals who were younger than 50 years of age to believe that their “symptoms of depression are due to [my] medical illness.”

In addition, PHQ produced a overall Wald value,  $X^2 = 6.587$  that was statistically significant at the  $p \leq .05$  (see Table 4-10). Based on the parameter estimates of the reduced model and inverting the odds ratio for PHQ score, Individuals with severe depression were 5.68 times more likely than individuals with no depression to agree that “symptoms of depression are due to [my] medical illness.”

**Table 4-10. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “Symptoms of depression are due to [my] medical illness” and the predictor variables age and PHQ (HIV subsample N = 106).**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Age</b>	-1.150	<b>4.599</b>	<b>.032</b>	.317
<b>PHQ Score</b>		<b>6.587</b>	<b>.037*</b>	
No Depression	-1.739	6.585	.010**	.176
Mild Depression	-1.158	3.359	.067	.290

\* $p \leq .05$ , \*\*  $p \leq .01$

The causal belief that “Stress was a major factor in causing symptoms of depression,” was produced a statistically significant relationship with race/ethnicity. The final model for race/ethnicity produced a Wald value of  $X^2 = 7.700$ , with an associated p value of .021 that was statistically significant (see Table 4.11). An inversion of the odds ratio indicates that, Whites that were HIV seropositive were 5 times more likely than African Americans and Latinos to believe that stress was a major factor in causing [their] symptoms of depression.

**Table 4-11. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “Stress was a major factor in causing symptoms of depression” and the predictor variables race/ethnicity (HIV subsample N = 106).**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (X<sup>2</sup>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Ethnicity</b>		<b>7.700</b>	<b>.021*</b>	
African Americans	-1.671	7.170	.007**	.188
Latinos	-1.629	6.158	.013*	.186

\*p<.05, \*\* p<.01

The sixth causal belief that rendered a statistically significant relationship with the one or more predictor variables was the belief that “Symptoms of depression were caused by poor medical care [received] in the past.” This belief produced a statistically significant relationship with race/ethnicity and education (see Table 4.12). Race/ethnicity produced a final Wald value,  $X^2 = 5.943$  with an associated p value = .05. Based on the parameter estimates and an inversion of the odds ratio, HIV seropositive Whites were 3 times more likely than African Americans to believe that their “Symptoms of depression were caused by poor medical care [received] in the past.”

In addition, education produced a Wald value,  $X^2 = 6.331$  with an associated p value of .012, which was statistically significant. Based on the final model and an inversion of the odds ratio, Individuals with a high school diploma or higher were 4 times more likely than individuals less than a high school diploma to believe that their “Symptoms of depression were caused by poor medical care [received in the past.”

**Table 4-12. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “Symptoms of depression were caused by poor medical care in the past” and the predictor variables age and PHQ (HIV subsample N = 106).**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Race/Ethnicity</b>		<b>5.943</b>	<b>.050*</b>	
African American	-1.453	5.589	.018*	.234
Latino	-1.164	3.229	.072	.312
<b>Education</b>	-1.408	<b>6.331</b>	<b>.012*</b>	

\*p<.05, \*\* p<.01

The last five causal beliefs all only produced a statistically significant relationship with the predictor, PHQ score. The five beliefs are as follows: (1) “Symptoms of depression are a medical reaction to my medical illness;” (2) The loss of a significant relationship caused symptoms of depression;” (3) My negative thinking caused my symptoms of depression;” (4) “My emotional state caused my symptoms of depression;” and (5) My altered immunity caused my symptoms of depression.”

The first belief “Symptoms of depression are a medical reaction to my medical illness,” produced a statistically significant relationship with an associated Wald value,  $X^2 = 7.763$  that was statistically significant at the p<.05 criterion level. The parameter estimates, indicate that while holding all other variables entered into the analysis constant and inverting the odds ratio, individuals with severe depression scores were 5 times more likely than individuals with no depression and 2.87 times more likely than individuals with mild depression scores to believe

that their “symptoms of depression are a medical reaction to [their] medical illness” (see Table 4.13).

The second belief that “The loss of a significant relationship caused symptoms of depression,” also produced a statistically significant relationship that produced an overall Wald value,  $X^2 = 6.186$ ,  $p = .045$ . Based on the parameter estimate of the reduced model and an odds ratio inversion, severely depression HIV seropositive individuals were almost 6 times more likely than HIV seropositive individuals who exhibited no depression to believe that “The loss of a significant relationship caused [their] symptoms of depression” (see Table 4.14).

The third relationship was with the belief, “My negative thinking caused my symptoms of depression,” and produced a Wald value,  $X^2 = 6.787$  with an associated  $p$  value = .034, that was statistically significant. The parameter estimates indicate that with an odds ratio inversion, individuals who are HIV seropositive and have severe depression scores on the PHQ inventory are 5 times more likely than individuals who are HIV seropositive but have no depression based on the PHQ inventory to believe that “[their] negative thinking caused [their] symptoms of depression” (see Table 4.15).

The next belief, “My emotional state caused my symptoms of depression,” revealed a Wald value,  $X^2 = 6.911$  with an associated  $p$  value = .032. Based on the inverted parameter estimates of the odds ratio, persons who are HIV seropositive with severe depression scores on the PHQ inventory were 3.77 times more likely than HIV seropositive persons with no depression on the PHQ inventory to believe that, “[their] emotional state caused [their] symptoms of depression” (see Table 4.16)

The final belief, “My altered immunity caused my symptoms of depression,” had a statistically significant relationship with PHQ score, and produced a Wald value,  $X^2 = 10.630$

with a p value = .005. The parameter estimates indicate that after inverting the odds ratio of the reduced model, severely depressed individuals were 7 times more likely than individuals with no depression to believe that, their altered immunity caused their symptoms of depression (see Table 4.17).

**Table 4-13. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “Symptoms of depression are a reaction to my medical illness” and the predictor variable PHQ (HIV subsample N = 106).**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (X<sup>2</sup>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>PHQ</b>		<b>7.763</b>	<b>.021*</b>	
No depression	-1.629	7.599	.006**	.196
Mild depression	-1.056	4.046	.044*	.348

\*p<.05, \*\* p<.01

**Table 4-14. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “The loss of a significant relationship caused my symptoms of depression” and the predictor variable PHQ (HIV subsample N = 106).**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (X<sup>2</sup>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>PHQ</b>		<b>6.186</b>	<b>.045*</b>	
No depression	-1.792	6.164	.013*	.167
Mild depression	-.570	1.311	.252	.566

\*p<.05, \*\* p<.01



**Table 4-15. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “My negative thinking caused my symptoms of depression” and the predictor variable PHQ (HIV subsample N = 106).**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>PHQ</b>		<b>6.787</b>	<b>.034*</b>	
No depression	-1.625	6.785	.009**	.197
Mild depression	-.620	1.645	.200	.538

\*p<.05, \*\* p<.01

**Table 4-16. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “My emotional state caused my symptoms of depression” and the predictor variable PHQ (HIV subsample N = 106).**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>PHQ</b>		<b>6.911</b>	<b>.032*</b>	
No depression	-1.327	4.855	.028*	.265
Mild depression	-.054	.012	.912	1.055

\*p<.05, \*\* p<.01

**Table 4-17. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “My altered immunity caused my symptoms of depression” and the predictor variable PHQ (HIV subsample N = 106).**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (X<sup>2</sup>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>PHQ</b>		<b>10.630</b>	<b>.005**</b>	
No depression	-1.966	10.508	.001**	.140
Mild depression	-.788	2.387	.122	.455

\*p<.05, \*\* p<.01

For the diabetic subsample, out of the 27 different causal beliefs, 11 revealed no significant relationship with the predictor variables entered into the analysis; while 16 of the were found to have a statistically significant relationship with one or more of the predictor variables. Table 4.18 reports the causal beliefs and their associated statistically significant predictors. In addition, a full table with all of the variables and corresponding coefficients can be reviewed in Appendix D.12 through D.27. A statistical significance of .05 was employed for all the tests. The logistic regression coefficient, Wald test, and odds ratio for each of the statistically significant causal beliefs with the associated predictors are described below and presented in Tables 4.19 through 4.34.

**Table 4.18. Relationship between Individual Causal Beliefs and the Predictor Variables  
(Diabetes subgroup N= 78)**

	<b><u>Predictor Variables</u></b>					
<b><u>Causal Belief</u></b>	Age	Education	Income	Gender	PHQ	Race/Ethnicity
1. A germ or virus caused symptoms of depression				✓		✓
2. The death of a loved one caused my symptoms of depression					✓	
3. My symptoms of depression are hereditary	✓				✓	
4. My symptoms of depression are due to a medical illness						✓
5. Stress was a major factor in causing my symptoms of depression					✓	
6. Other people played a large role in causing my symptoms depression		✓				✓
7. My symptoms of depression were caused by poor medical care in the past						✓
8. My symptoms of depression are a reaction to a medical illness						✓
9. The loss of a significant relationship caused my symptoms of depression	✓				✓	
10. My negative thinking caused my symptoms of depression	✓					✓
11. Family problems or worries caused my symptoms of depression	✓				✓	
12. My personality caused my symptoms of depression					✓	
13. My emotional state caused my symptoms of depression	✓				✓	
14. My symptoms of depression are due to me getting older.	✓		✓			
15. My symptoms of depression are due to smoking						✓
16. My altered immunity caused my symptoms of depression				✓	✓	

The first belief, similar to that found in the HIV subpopulation, was the belief that “A Germ or Virus caused symptoms of depression”. With regard to this belief, the reduced model produced a statistically significant relationship with gender and race/ethnicity. The overall relationship with gender produced a Wald value,  $X^2 = 5.190$ , which was significant ( $p \leq .05$ ) (See table 4-19). Based on the parameter estimates of the reduced model and a odds ratio inversion, Males within the diabetic subgroup were 4 times more likely than females in the same subgroup to believe that, “a germ or virus caused symptoms of depression.”

In addition, as shown in Table 4-19, race/ethnicity also produced a statistically significant with the causal belief that “A Germ or Virus caused symptoms of depression”. This relationship produced a final Waldd value,  $X^2 = 5.189$ . An inversion of the odds ratio indicates that, Whites within the diabetic subgroup were 5.78 ( $p = .029$ ) times more likely than Latinos in the same subgroup to believe that, “a germ or virus caused symptoms of depression.”

The second belief, “The death of a loved one caused my symptoms of depression,” produced statistically significant relationship only one predictor, PHQ score. This relationship produced a Wald value,  $X^2 = 5.413$ . Based on an inverted odds ratio, individuals with severe depression scores in the diabetic subgroup were 13 times more likely than individuals with no depression based on the PHQ inventory to believe that “the death of a loved one caused [their] symptoms of depression,” (see Table 4.20).

**Table 4-19. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “A germ or virus caused my symptoms of depression” and the predictor variables gender and race/ethnicity (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Gender</b>	-1.390	<b>10.630</b>	<b>.023*</b>	.249
<b>Ethnicity</b>		<b>5.189</b>	<b>.050*</b>	
African American	-.545	.534	.465	.580
Latino	-1.753	4.769	.029*	.173

\*p<.05, \*\* p<.01

**Table 4-20. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “The death of a loved one caused my symptoms of depression” and the predictor variable PHQ (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>PHQ</b>		<b>5.413</b>	<b>.047*</b>	
No depression	-2.590	5.332	.021*	.075
Mild depression	-.588	1.000	.317	.556

\*p<.05, \*\* p<.01

Among the diabetic subsample, the belief that their “symptoms of depression are hereditary,” was found to have statistically significant relationships with the predictor variables age and PHQ score. The final model for age produced a Wald value,  $X^2 = 4.017$  and the final model for PHQ score produced a Wald value,  $X^2 = 6.557$ . Based on these parameter estimates and an inversion of the odds ratio for age, individuals with diabetes that were older than 50 years of age were almost 3 times more likely than individuals with diabetes that were younger than 50

years of age to believe that their “symptoms of depression are hereditary.” In addition, diabetic individuals with mild depression were 4.246 times more likely than diabetic individuals with severe depression scores on the PHQ inventory to believe that their “symptoms of depression are hereditary” (see Table 4.21)

**Table 4-21. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “My symptoms of depression are hereditary” and the predictor variables age and PHQ (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Age</b>	-1.067	<b>4.017</b>	<b>.045*</b>	.344
<b>PHQ</b>		<b>6.557</b>	<b>.038*</b>	
No depression	1.34	.043	.836	1.143
Mild depression	1.446	5.166	.023*	4.246

\*p<.05, \*\* p<.01

The next causal belief, “My symptoms of depression are due to a medical illness,” had a statistically significant relationship with the predictor race/ethnicity. This relationship produced a final Wald value of,  $X^2 = 6.122$  with an associated p value = .047. An inversion of the odds ratio of the parameter estimates indicates that Whites with diabetes were 5.78 times more likely than Latinos with diabetes to believe that their “symptoms of depression are due to a medical illness” (see Table 4.22).

The fifth causal belief, “Stress was a major factor in causing my symptoms of depression,” produced a statistically significant relationship with PHQ score. The final model revealed a Wald value for PHQ,  $X^2 = 6.785$  that was statistically significant ( $p \leq .05$ ). The parameter estimates of the reduced model and an inversion of the odds ratio reveal that, diabetic individuals

with severe depression scores on the PHQ inventory were 5.84 times more likely than diabetic individuals with no depression on the PHQ inventory to believe that “stress was a major factor in causing their symptoms of depression” (see Table 4.23).

**Table 4-22. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “My symptoms of depression are due to a medical illness” and the predictor variable race/ethnicity (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Ethnicity</b>		<b>6.122</b>	<b>.047*</b>	
African American	-.817	.843	.359	1.143
Latino	-1.754	4.466	.035*	.173

\*p<.05, \*\* p<.01

**Table 4-23. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “Stress was a major factor in causing my symptoms of depression” and the predictor variable PHQ (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>PHQ</b>		<b>6.785</b>	<b>.034*</b>	
No depression	-1.764	6.597	.010**	.171
Mild depression	-.685	1.352	.245	.504

\*p<.05, \*\* p<.01

The sixth causal belief, “Other people played a large role in causing my symptoms of depression,” had a statistically significant relationship with race/ethnicity and education. The final model produced Wald values of,  $X^2 = 4.617$  and  $X^2 = 5.122$ , for race/ethnicity and education respectively. Based on the parameter estimates and an inversion of the odds ratios, White

diabetics were 5.21 times more likely than Latino diabetics and individuals with at least a high school diploma were 3.89 times more likely than individuals with less than a high school diploma to believe that, “other people played a large role in causing [their] symptoms of depression” (see Table 4.24).

**Table 4-24. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “Other people played a large role in causing my symptoms of depression” and the predictor variables race/ethnicity and education (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Ethnicity</b>		<b>4.617</b>	<b>.047*</b>	
African American	-.981	1.801	.180	.375
Latino	-1.652	4.617	.032*	.192
<b>Education</b>	-1.357	<b>5.122</b>	<b>.024</b>	.257

\*p<.05, \*\* p<.01

The next two causal beliefs produced statistically significant relationships with the predictor variable race/ethnicity only. The first was the causal belief that, “my symptoms of depression were caused by poor medical care in the past.” In the final model the effects of race/ethnicity on the first causal belief produced a Wald value,  $X^2 = 5.311$ . An interpretation of the reduced model and an inversion of the odds ratio reveal that, Whites were 4.807 times more likely than Latino diabetics to believe that their “symptoms of depression were caused by poor medical care in the past” (see table 4.25). The second belief was “my symptoms of depression are a reaction to a medical illness.” Race/ethnicity produced a final Wald value,  $X^2 = 5.702$  with this second causal belief. Based on the parameter estimates of this second relationship and an inversion of the odds ratio, Whites were 14 times more likely than African Americans and 11



times more likely than Latinos to believe that, “[their] symptoms of depression are a reaction to a medical illness” (see Table 4.26).

**Table 4-25. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “my symptoms of depression were caused by poor medical care in the past” and the predictor variable race/ethnicity (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Ethnicity</b>		<b>5.311</b>	<b>.050*</b>	
African American	-1.041	2.122	.145	.353
Latino	-1.571	5.311	.021*	.208

\*p<.05, \*\* p<.01

**Table 4-26. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “my symptoms of depression are a reaction to a medical illness” and the predictor variable race/ethnicity (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Ethnicity</b>		<b>5.702</b>	<b>.048*</b>	
African American	-2.652	5.621	.018*	.071
Latino	-2.436	5.025	.025*	.088

\*p<.05, \*\* p<.01

The ninth causal belief, “the loss of a significant relationship caused my symptoms of depression,” had a statistically significant relationship with age and PHQ score. In the reduced model age produced a Wald,  $X^2 = 5.140$  and PHQ produced a Wald value,  $X^2 = 6.399$ . According to the parameter estimates of the reduced model, diabetic individuals who were younger than 50 years of age were 4.385 times more likely than diabetic individuals who were older than 50 years of age to believe that “the loss of a significant relationship caused [their] symptoms of

depression.” In addition, an inverted odds ratio of PHQ score indicated that diabetic individuals with severe depression scores on the PHQ inventory were 16.949 times more likely than diabetic individuals with no depression on the PHQ inventory to believe that, “ the loss of a significant relationship caused [their] symptoms of depression” (see Table 4.27).

The causal belief that, “...negative thinking caused ...symptoms of depression,” exhibited a statistically significant relationship with two predictors. The first was race/ethnicity, which produced a final Wald value,  $X^2 = 7.479$  with an associated  $p = .007$ . The second was age that produced a final Wald value,  $X^2 = 5.192$  that was also significant at the  $p \leq .05$  criterion level. Based on the parameter estimates of the reduced model and an inverted odds ration for race/ethnicity, Whites were 10.526 times more likely than African Americans and 3.98 times more likely than Latinos to believe that “[their] negative thinking caused ...symptoms of depression.” Additionally, individuals who were less than 50 years of age were 3.768 times more likely than individuals who were 50 years or older to also believe that “[their] negative thinking caused [their] symptoms of depression” (see Table 4.28).

**Table 4-27. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “the loss of a significant relationship caused my symptoms of depression” and the predictor variables age and PHQ (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Age</b>	1.478	<b>5.140</b>	<b>.023*</b>	4.385
<b>PHQ</b>		<b>6.399</b>	<b>.041*</b>	
No depression	-2.830	5.951	.015*	.059
Mild depression	-.995	2.288	.130	.370

\* $p \leq .05$ , \*\*  $p \leq .01$

**Table 4-28. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “my negative thinking caused my symptoms of depression” and the predictor variables race/ethnicity and age (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (X<sup>2</sup>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Race/ethnicity</b>		<b>7.479</b>	<b>.024*</b>	
African Americans	-2.354	7.271	.007**	.095
Latinos	-1.381	3.875	.049*	.251
<b>Age</b>	1.327	<b>6.399</b>	<b>.023*</b>	3.768

\*p<.05, \*\* p<.01

The eleventh causal belief, “Family problems or worries caused my symptoms of depression,” produced statistically significant relationships with age and PHQ. In the reduced model, age produced a Wald value,  $X^2 = 4.118$  and PHQ produced a Wald value,  $X^2 = 10.288$  both of which were statistically significant at the  $p \leq .05$  criterion level. According to the parameter estimates of the reduced model, individuals who were younger than 50 years of age were 2.959 times more likely than their counterparts to believe that “family problems or worries caused symptoms of depression.” An inverted odds ratio of PHQ indicated that, individuals with severe depression scores on the PHQ inventory were 11.904 times more likely than individuals with no depression on the PHQ inventory and 3.77 times more likely than individuals with mild depression scores on the PHQ inventory to believe that family problems or worries had caused their symptoms of depression (see Table 4.29),

The twelfth causal belief, “my personality caused my symptoms of depression,” had a statistically significant relationship PHQ score. In the reduced model PHQ score produced a Wald value,  $X^2 = 5.733$ . Based on an inversion of the odds ratio, the parameter estimates indicate that individuals with severe depression on the PHQ inventory were 13.157 times more likely

than individuals with no depression on the PHQ inventory to believe that their personality caused their symptoms of depression (see Table 4.30).

**Table 4-29. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “family problems or worries caused my symptoms of depression” and the predictor variables PHQ and age (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Age</b>	1.085	<b>4.118</b>	<b>.042*</b>	2.959
<b>PHQ</b>		<b>10.288</b>	<b>.006**</b>	
No depression	-2.474	10.194	.001***	.084
Mild depression	-1.327	4.334	.037*	.265

\*p• .05, \*\* p• .01, \*\*\* p• .001

**Table 4-30. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “my personality caused my symptoms of depression” and the predictor variables gender, age, and PHQ (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>PHQ</b>		<b>5.733</b>	<b>.050*</b>	
No depression	-2.582	4.960	.026*	.076
Mild depression	-1.104	2.474	.116	.332

\*p• .05, \*\* p• .01

The causal belief, “my emotional state caused my symptoms of depression,” revealed statistically significant relationships with three predictor variables; (1) income, (2) age, and (3) PHQ. The first predictor, age produced a Wald value,  $X^2 = 5.984$ . The reduced model parameter

estimates revealed that younger individuals were 4.370 times more likely than older individuals to believe that their emotional state caused their symptoms of depression. Next, PHQ produced a Wald value,  $X^2 = 13.396$ . After inverting the odds ratio, the parameter estimates indicate that individuals with severe depression were 21.739 times more likely than individuals with no depression and 9.433 times more likely than individuals with mild depression to believe that their emotional state caused their symptoms of depression (see Table 4.31).

“My symptoms of depression are due to me getting older,” was the fourteenth causal belief among the diabetic subgroup that produced statistically significant relationships with one or more of the predictor variables. In particular, this belief produced statistical significance with income and age. In the reduced model, income produced a Wald value,  $X^2 = 5.921$  and age produced a Wald value,  $X^2 = 6.585$ . Based on this reduce model, individual with lower incomes were 4.133 times more likely than individuals with higher incomes and individuals who were younger than 50 were 3.628 times more likely than individuals who were 50 years or older to believe that their symptoms of depression were due to them getting older (see Table 4.32).

**Table 4-31. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “my emotional state caused my symptoms of depression” and the predictor variables income, age, and PHQ (Diabetic subsample N = 78)**

Predictor	<u>B</u>	<u>Wald (<math>X^2</math>)</u>	<u>p</u>	<u>Odds Ratio</u>
Age	1.475	<b>5.984</b>	<b>.014**</b>	4.370
<b>PHQ</b>		<b>13.396</b>	<b>.001***</b>	
No depression	-3.069	12.298	.000***	.046
Mild depression	-2.246	9.243	.002**	.106

\*p• .05, \*\* p• .01, \*\*\* p• .001

Next the causal belief, “my symptoms of depression are due to smoking,” had a statistically significant relationship with race/ethnicity. The impact of race/ethnicity on this causal belief produced a Wald value,  $X^2 = 7.631$ . The reduced model parameter estimates and an inversion of the odds ratio reveal that, Whites were 17.857 times more likely than Latinos to believe that their symptoms of depression are due to smoking (see Table 4.33).

**Table 4-32. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “my symptoms of depression are due to me getting older” and the predictor variables income and age (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Income</b>	1.419	<b>5.921</b>	<b>.015*</b>	4.133
<b>Age</b>	1.289	<b>6.585</b>	<b>.010**</b>	3.628

\*p• .05, \*\* p• .01, \*\*\* p• .001

**Table 4-33. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “my symptoms of depression are due to smoking” and the predictor variable race/ethnicity (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Ethnicity</b>		<b>7.631</b>	<b>.022*</b>	
African American	.118	.025	.874	.1125
Latino	-2.878	5.975	.015*	.056

\*p• .05, \*\* p• .01, \*\*\* p• .001

The final causal belief, “my altered immunity caused my symptoms of depression,” had a statistically relationship with predictor variables, gender and PHQ. In the final model, gender and PHQ produced Wald values,  $X^2 = 4.302$  and  $4.637$ , respectively. Based on the parameter estimates of the reduced model and an inversion of the odds ratios, males were 3 times more likely than females and individuals with severe depression scores on the PHQ inventory were 4.83 times more likely to believe that their altered immunity caused their symptoms of depression (see Table 4.34).

**Table 4-34. Backward Elimination Logistic Regression predicting the relationship between the causal belief that “my altered immunity caused my symptoms of depression” and the predictor variables gender and PHQ (Diabetic subsample N = 78)**

<b>Predictor</b>	<b><u>B</u></b>	<b><u>Wald (<math>X^2</math>)</u></b>	<b><u>p</u></b>	<b><u>Odds Ratio</u></b>
<b>Gender</b>	-1.100	<b>4.302</b>	<b>.038*</b>	.333
<b>PHQ</b>		<b>4.637</b>	<b>.048*</b>	
No depression	-1.576	4.509	.034*	.207
Moderate depression	-.799	1.811	.178	.450

\*p• .05, \*\* p• .01, \*\*\* p• .001

## *Question 2*

Q<sub>2</sub>: Which treatments for depressive symptoms are preferred by different ethnic groups with the same illness type?

Based on this question, chronically ill patients were presented with one question about their treatment preference for symptoms of depression. This question was analyzed separately for both of the illnesses (HIV & Diabetes) explored in this study. Within the HIV subsample, the multinomial logit analysis revealed a likelihood of statistically significant differences across ethnicity with regard to treatment modal preferences for depression ( $p \leq .05$ ). The results of the final model revealed a chi-square value,  $X^2 (12, N=106) = 20.106$  that was statistically significant at the  $p \leq .05$  (see Table 4-35).

Based on the final model, race/ethnicity showed a statistically significant relationship with the treatment modal preference for symptoms of depression. Race/ethnicity produced a chi-square value,  $X^2 (4, N=106) = 11.679$   $p=.003$  (see Table 4-35). Thus the null hypothesis that no relationship exists between the predictor variable and the dependent variable is rejected. Based on the parameter estimates of the final model, HIV seropositive Latinos were 11.749 ( $p = .024$ ) times more likely than Whites to prefer medication for the treatment of symptoms of depression over a combined (medication and counseling) approach (see Table 4-35) and 12.460 times more likely to prefer counseling over a combined treatment approach. There were no significant differences found between African Americans and Whites in the treatment modal preferences for symptoms of depression.

However, additional statistically significant findings with regard to gender were found in this analysis. Based on the parameter estimates, females with HIV were 15.864 ( $p = .016$ ) more



likely than males to prefer counseling over combined treatment for symptoms of depression (see Table 4-35)

For the diabetic subsample, the multinomial logit analysis produced a likelihood that revealed a statistically significant difference across ethnicity with regard to treatment modality preferences for depression ( $p \leq .05$ ). The results of the final model revealed a chi-square value,  $X^2 (12, N=78) = 29.792$  that was statistically significant at the  $p \leq .05$  (see Table 4-36).

The final model indicated that race/ethnicity produced a statistically significant relationship with the treatment modality preference for the treatment of depression. Race/ethnicity produced a chi-square value,  $X^2 (4, N=78) = 14.168$   $p=.007$  (see Table 4-36). Thus the null hypothesis that no relationship exists between modality treatment preferences and ethnicity is rejected. Based on these parameter estimates, Latinos were 9.658 ( $p = .001$ ) times more likely than Whites to prefer counseling for the treatment of symptoms of depression over a combination treatment approach (see Table 4-36), while Whites were 6.94 times more likely than Latinos to prefer medication over a combination treatment approach. There were no significant differences found between African Americans and Whites diabetic individuals in the treatment modal preferences for symptoms of depression.

Additionally, gender also produced a statistically significant relationship with treatment modal preference. Gender produced a chi-square,  $X^2 (2, N=78) = 6.938$ ,  $p=.031$ . Based on the parameter estimates, women were 4.841 times more likely than men to prefer counseling over combination treatment for symptoms of depression.

**Table 4-35. Multinomial Logistic Regression examining the relationship between “Treatment Modality Preference” and the predictor variables age, gender, PHQ, education, and race/ethnicity (HIV subgroup N=106)**

Effect	<u>Model fitting criteria</u>		<u>Likelihood ratio tests</u>	
	-2 log likelihood	Chi-square	df	Sig.
Intercept only	108.524			
Final model	78.732	29.792	12	.028*
<b>Reduced Model</b>				
Intercept	42.193 <sup>a</sup>	.000	0	
PHQ	42.387	.194	2	.907
Education	42.284	.092	2	.955
Age	45.307	3.114	2	.211
Gender	49.479	7.286	2	.026*
Ethnicity	53.872	11.679	4	.003**
<b>Parameter Estimates</b>				
	<u>B</u>	<u>Std. Error</u>	<u>Exp(B)</u>	<u>Sig.</u>
<u><b>MEDICATION</b></u>				
<i>Ethnicity</i>				
Latinos	2.464	1.091	11.749	.024*
<u><b>COUNSELING</b></u>				
<i>Ethnicity</i>				
Latinos	2.522	1.008	12.460	.012*
<i>Gender</i>				
Female	2.764	1.152	15.864	.016*

*Note: the dependent variable is “Treatment Modality Preference” reference category is “combination treatment”; Reference category for ethnicity is “White”; Reference category for gender is “male”*

<sup>a</sup>The intercept is equivalent to the final model.

\*p• .05,\*\* p• .01, \*\*\* p• .01

**Table 4-36. Multinomial Logistic Regression examining the relationship between “Treatment Modality Preference” and the predictor variables age, PHQ, education, and race/ethnicity (Diabetic Subgroup N=78)**

Effect	<u>Model fitting criteria</u>		<u>Likelihood ratio tests</u>	
	-2 log likelihood	Chi-square	df	Sig.
Intercept only	108.524			
Final model	78.732	29.792	12	.003**
<b>Reduced Model</b>				
Intercept	78.732 <sup>a</sup>	.000	0	
Gender	85.671	6.938	2	.031
PHQ	79.852	1.120	2	.571
Education	80.359	1.627	2	.443
Age	79.117	.385	2	.825
Ethnicity	92.900	14.168	4	.007**
Parameter Estimates	<u>B</u>	<u>Std. Error</u>	<u>Exp(B)</u>	<u>Sig.</u>
<b><u>MEDICATION</u></b>				
<i>Ethnicity</i> Latinos	-1.936	1.053	.144	.046*
<b><u>COUNSELING</u></b>				
<i>Ethnicity</i> Latinos	2.268	1.239	9.658	.047*
<i>Gender</i> Female	1.577	.656	4.841	.016*

*Note: the dependent variable is “Treatment Modality Preference” reference category is “combination treatment”; Reference category for ethnicity is “White”;*

*<sup>a</sup>The intercept is equivalent to the final model.*

\*p• .05, \*\* p• .01, \*\*\*p• .001

### *Question 3*

Q<sub>3</sub>: Which provider do different ethnic groups with the same illness, prefer to provide their treatment for the symptoms of depression?

Within both the HIV and the diabetic subsamples the multinomial logit models revealed no statistically significant differences across ethnicity with regard to provider preferences for the treatment of symptoms depression. For this analysis, provider preference was coded (1) Doctor/NP, (2) Psychiatrist/Psychologist, (3) Social Worker, (4) Provider combination, (5) system missing. The outcome variable provider preferences were regressed on the predictor variables age, gender, education, income, PHQ, and race/ethnicity. The model coefficient for the HIV subgroup yielded a chi square value,  $X^2 = 31.945$  ( $p=.059$ ). Additionally, the -2 Log likelihood = 124.397, may have been too large to indicate a good fit (Tabachnick and Fidell, 2001). However, the findings may still provide information for clinical settings. Therefore for this research question and the remaining research questions, relationships that were close to significance will be interpreted with the caution that these relationships need to be examined more carefully in future research incorporating larger sample sizes to determine if the relationship between the variables is statistically significant. In the final model, HIV seropositive African Americans and Latinos showed a tendency to prefer doctors for the treatment of depressive symptoms than their White counterparts. In fact, African Americans were almost 5 times as likely ( $p= .074$ ) and Latinos were almost 6 times as likely ( $p=.056$ ) than Whites to prefer a doctor over a psychologist/psychiatrist for the treatment of depression.

In the diabetic group, the model chi-square value,  $X^2 = 12.356$  that was not statistically significant ( $p=.578$ ). In addition, the Cox and Snell R square = .160, and the Nagelkerke R square = .184, may have been too small to account for any of the prediction of provider

preferences among this group (Tabachnick and Fidell, 2001). Table 4.38 presents the effects of the each of the predictor variables in the equation. There were no statistically significant relationships between any of the predictors and provider preferences.

**Table 4-37. Multinomial Logistic Regression examining the relationship between “Provider Preference” and the predictor variables age, PHQ, education, and race/ethnicity (HIV Subgroup N=106)**

Effect	<u>Model fitting criteria</u>		<u>Likelihood ratio tests</u>	
	-2 log likelihood	Chi-square	df	Sig.
Intercept only	156.342			
Final model	124.397	31.945	21	.059
<b>Reduced Model</b>				
Intercept	124.397 <sup>a</sup>	.000	0	
Gender	130.131	5.735	3	.125
PHQ	127.548	3.152	3	.369
Education	131.822	7.425	3	.060
Age	131.478	7.081	3	.069
Ethnicity	136.196	11.799	6	.067
Parameter Estimates	<u>B</u>	<u>Std. Error</u>	<u>Exp(B)</u>	<u>Sig.</u>
<b><u>DOCTORS/NP</u></b>				
<i><b>Ethnicity</b></i>				
African Americans	1.584	.886	4.875	.074
Latinos	1.775	.931	5.901	.056

**Reference category for Provider Preference= provider combination; reference category for ethnicity is White.**

<sup>a</sup>The intercept is equivalent to the final model.

\*p• .05,\*\* p• .01, \*\*\*p• .001

**Table 4-38. Multinomial Logistic Regression examining the relationship between “Provider Preference” and the predictor variables age, PHQ, education, and race/ethnicity (Diabetic Subgroup N=78)**

Effect	<u>Model fitting criteria</u>	<u>Likelihood ratio tests</u>		
	-2 log likelihood	Chi-square	df	Sig.
Intercept	91.733 <sup>a</sup>	.000	0	
Gender	94.434	2.701	2	.259
PHQ	92.219	.485	2	.784
Education	94.747	3.014	2	.222
Age	92.738	1.004	2	.605
Ethnicity	93.082	1.349	4	.853

\*p• .05,\*\* p• .01, \*\*\*p• .001

#### *Question 4*

Q4: Does the number of physical symptoms or complications of illness impact how patients attribute symptoms of depression?

Within the HIV subsample, the number of physical symptoms was coded into 3 ranges with (1) 1-3 symptoms, (2) 4-6 symptoms, and (3) 7+ symptoms. The multinomial logit model revealed a statistically significant relationship between the number of physical symptoms endorsed by the patient and their causal beliefs of symptoms of depression ( $p \leq .05$ ). In particular, there were two causal beliefs that produced a statistically significant relationship with the number of physical symptoms. The first causal belief that produced a statistically significant relationship with physical symptoms was the belief that ‘marriage or relationship problems

caused symptoms of depression.’ Next, the belief that symptoms of depression were a reaction to [their] medical illness revealed a statistically significant relationship with the predictor variable.

In the first analysis, the final model for the number of physical symptoms and the causal belief that “marriage or relationship problems caused symptoms of depression” produced a chi-square value,  $X^2 (2, N=106) = 6.116$   $p=.047$  (see Table 4-39). Based on the parameter estimates of the this model, Individuals who reported the 1-3 physical symptoms of illness were 3.920 times ( $p = .019$ ) more likely to agree that their symptoms of depression were caused by relationship problems than individuals who reported 7 or more physical symptoms of illness (see Table 4-39).

In the second analysis, the final model for the number of physical symptoms and the causal belief that “symptoms of depression were a reaction to [their] medical illness,” produced a chi-square value,  $X^2 (2, N=106) = 13.109$ ,  $p=.001$  (see Table 4-40). Based on the parameter estimates and an inversion of the odds ratio, HIV positive individuals who reported the 7 or more physical symptoms of illness were 6.667 times ( $p = .001$ ) more likely to agree that their symptoms of depression were caused by their medical illness than individuals who reported the 1-3 physical symptoms of illness.

Among the diabetic subgroup, the number of complications of physical illness was coded into 3 ranges with (1) 1-2 symptoms, (2) 3-4 symptoms, and (3) 5+ symptoms. There were no significant findings with regard to the relationship between the number of complications endorsed by the participants and causal beliefs of symptoms of depression among the Diabetic subsample. However, some relationships approximated statistical significance and these relationships will be discussed and presented in Table 4.41. The effect of the number of complications of physical illness on the causal belief, ‘stress played a major role in causing

symptoms of depression,' produced a chi-square value,  $X^2 (2, N=78) = 4.298$  that was not statistically significant ( $p = .117$ ). The parameter estimates of the final model indicted that with an inverted odds ratio, individuals who reported 5 or more complications of physical illness were 2.58 times ( $p= .057$ ) more likely than individuals who reported a 3 -4 complications of physical illness to believe that stress played a major role in causing symptoms of depression.

Next, the number of complications produced an effect on the belief that family problems or worries with an associated chi-square value,  $X^2 (2, N=78) = 4.610$  that was not statistically significant ( $p= .100$ ). Based on the parameter estimates and an inversion of the odds ratio, individuals who reported 5 or more complications of physical illness were 5 times ( $p= .061$ ) more likely than individuals who reported the 1-2 complications of physical illness to believe that family problems or worries caused symptoms of depression.



**Table 4-39. Multinomial Logistic Regression examining the relationship between the “marriage or relationship problems led to my symptoms of depression” and the predictor variable “number of physical symptoms.” (HIV subsample N= 106)**

Effect	<u>Model fitting</u> <u>criteria</u>	<u>Likelihood ratio tests</u>		
	-2 log likelihood	<u>Chi-square</u>	<u>df</u>	<u>Sig.</u>
Intercept only	15.878			
Final model	9.762	6.116	2	.047*
<b>Reduced Model</b>				
Intercept	9.762 <sup>a</sup>	.000	0	
Number of Symptoms	15.878	6.116	2	.047*
<hr/>				
Parameter Estimates	<u>B</u>	<u>Std. Error</u>	<u>Exp(B)</u>	<u>Sig.</u>
<b><u>AGREE vs DISAGREE</u></b>				
<i>Number of Symptoms</i>				
1-3 Symptoms	1.366	.583	3.920	.019*

Reference category for number of symptoms = 7+ symptoms

\*p• .05,\*\* p• .01, \*\*\*p• .001

**Table 4-40. Multinomial Logistic Regression examining the relationship between, “Symptoms of depression due to a medical illness” and the predictor variable “number of physical symptoms.” (HIV subsample N= 106)**

Effect	Model fitting criteria	Likelihood ratio tests		
	-2 log likelihood	Chi-square	df	Sig.
Intercept only	22.952			
Final model	9.843	13.109	2	.001***
<b>Reduced Model</b>				
Intercept	9.843 <sup>a</sup>	.000	0	
Number of Symptoms	22.952	13.109	2	.001***
<b>Parameter Estimates</b>				
	<u>B</u>	<u>Std.</u> <u>Error</u>	<u>Exp(B)</u>	<u>Sig.</u>
<b><u>AGREE vs DISAGREE</u></b>				
<b><i>Number of Symptoms</i></b>				
1-3 symptoms	-1.895	.576	.150	.001***
Reference category for number of symptoms = 7+ symptoms				
*p• .05,** p• .01, ***p• .001				

**Table 4-41. Multinomial Logistic Regression examining the relationship between, “causal beliefs” and the predictor variable “number of complications of physical illness.” (Diabetes subsample N= 78)**

<b>Effect</b>	<b><u>Model fitting criteria</u></b>		<b><u>Likelihood ratio tests</u></b>	
	<b>-2 log likelihood</b>	<b><u>Chi-square</u></b>	<b><u>df</u></b>	<b><u>Sig.</u></b>
<b><u>Causal Belief</u></b>				
<b>1. Stress</b>				
# of physical symptoms	14.932	4.298	2	.117
<b>2. Family problems</b>				
# of physical symptoms	14.939	4.610	2	.100
<b>Parameter Estimates</b>	<b><u>B</u></b>	<b><u>Std. Error</u></b>	<b><u>Exp(B)</u></b>	<b><u>Sig.</u></b>
<b><u>AGREE vs DISAGREE</u></b>				
<b>1. Stress</b>				
<i>Number of Symptoms</i>				
3-4 Symptoms	-.950	.500	.387	.057
<b>2. Family problems</b>				
<i>Number of Symptoms</i>				
1-2 Symptoms	-1.609	.859	.200	.061
Reference category for number of symptoms = 5+				
*p• .05,** p• .01, ***p• .001				

#### *Question 5*

Q<sub>5</sub>: Does the number of physical symptoms or complications of illness impact depression scores?

For this question, the number of physical symptoms was coded the same as above and depression was coded (1) no depression, (2) mild depression, (3) moderate/severe depression. For the HIV subgroup, the multinomial logit analysis produced a likelihood that revealed a

statistically significant relationship between the number of physical symptoms reported by the patients and depression scores on the PHQ-9 ( $p \leq .05$ ). The results of the final model revealed a chi-square value,  $X^2 (2, N=88) = 7.298$  that was statistically significant at the  $p \leq .05$  (see Table 4-42).

Based on the final model, number of physical symptoms endorsed by the patient showed a statistically significant relationship with depression scores on the PHQ-9. Number of symptoms revealed a chi-square value,  $X^2 (2, N=88) = 7.298$   $p=.026$  (see Table 4-42). Based on these parameter estimates, Individuals who reported a 4-6 physical symptoms associated with their physical illness were 7.083 times ( $p= .015$ ) more likely to report no symptoms of depression than those who reported 7 or more physical symptoms associated with their physical illness (see Table 4-42).

For the diabetic subgroup, no statistically significant relationship between the number of physical symptoms reported by the patient and depression scores on the PHQ-9 were identified. However, those relationships that came close to statistical significance will be discussed based on their potential of clinical significance. The effect of the number of complications of physical illness on PHQ scores produced a chi-square value,  $X^2 (2, N=78) = 8.128$  that was not statistically significant ( $p=.087$ ). Thus the parameter estimates are interpreted with the caution that future research should examine the relationship between the number of complications of physical illness and severity of depression with a larger sample size to determine if a statistically significant relationship exists.

The parameter estimates indicate that, individuals who reported the 1-2 complications of physical illness were 10 times more likely to exhibit no depression on the PHQ inventory ( $p=.053$ ) and individuals who reported a 3-4 complications of physical illness were 3.360 times

more likely were more likely to have mild depression based on the PHQ inventory (p=.053) than individuals who reported 5 or more complications of physical illness (see Table 4.43)

**Table 4-42. Multinomial Logistic Regression examining the relationship between the “Depression Scores” and the predictor variable “number of physical symptoms.” (HIV subgroup N= 102)**

Effect	<u>Model fitting criteria</u>  -2 log likelihood	<u>Likelihood ratio tests</u>		
		<u>Chi-square</u>	<u>df</u>	<u>Sig.</u>
Intercept	10.201 <sup>a</sup>	.000	0	
Number of Symptoms	17.498	7.298	2	.026*

<b>Parameter Estimates</b>	<b><u>B</u></b>	<b><u>Std. Error</u></b>	<b><u>Exp(B)</u></b>	<b><u>Sig.</u></b>
<b><u>NO DEPRESSION vs. SEVERE DEPRESSION</u></b>				
<i>Number of Symptoms</i>				
3-4 symptoms	1.958	.804	7.083	.015*

Reference category for number of symptoms = 5+ symptoms

\*p• .05,\*\* p• .01, \*\*\*p• .001

**Table 4-43. Multinomial Logistic Regression examining the relationship between the “Depression Scores” and the predictor variable “number of complications.” (Diabetes subgroup N= 78)**

Effect	<u>Model fitting criteria</u>	<u>Likelihood ratio tests</u>		
	<u>-2 log likelihood</u>	<u>Chi-square</u>	<u>df</u>	<u>Sig.</u>
Intercept	18.980	.000	0	
Number of Symptoms	27.107	8.128	4	.08

<b>Parameter Estimates</b>	<b><u>B</u></b>	<b><u>Std. Error</u></b>	<b><u>Exp(B)</u></b>	<b><u>Sig.</u></b>
<b><u>NO DEPRESSION vs. SEVERE DEPRESSION</u></b>				
<i>Number of Symptoms</i>				
1-2 Symptoms	2.303	1.189	10.000	.05
<b><u>MILD DEPRESSION vs. SEVERE DEPRESSION</u></b>				
3-4 Symptoms	1.212	.627	3.360	.05

Reference Category for number of symptoms = 5+ symptoms

\*p• .05,\*\* p• .01, \*\*\*p• .001

#### *Question 6*

Q<sub>6</sub>: Among individuals with the same illness type, which pattern of causal beliefs for the symptoms of depression best predicts treatment preferences (mode) for depression?

For this question, a factor analysis was first run on the cause subscale of the IPQ to determine the groupings of causal beliefs that were later used to predict treatment preferences and provider preferences among HIV and diabetic participants.

The KMO and Bartlett tests were also conducted as indicators that a factor analysis with the items was feasible. The KMO measures the sampling adequacy and should render a value of

at least .50 in order to proceed with the factor analysis interpretation. In addition, the Bartlett test of sphericity should be significant at your set significance level (for this test the significance test was set at  $p = .05$ ). The Bartlett test of sphericity examines if the correlation matrix is a identity matrix. The KMO for the HIV subsample analysis was .798, and the Bartlett test of sphericity produced a chi-square value,  $X^2 (171) = 695.383$   $p = .001$  for the HIV subsample factors (see Table 4-44). These two values satisfy the minimum values to proceed with the interpretation. Once the KMO and Bartlett tests were performed and satisfied, items were included in the analysis they rendered a factor loading coefficient greater than .50 in the component matrix and if the total value of the components explained at least 60 percent of the total variance. Items were eliminated until both of these criteria were satisfied with all the items and the total variance.

For the HIV subsample, three factors were identified in the final analysis. The first factor, which was named The Stress Related Factor, contained 8 items that are listed below (see Table 4-45):

- Item 3: The death of a loved one caused my symptoms of depression
- Item 10: Stress is a major factor in causing my symptoms of depression
- Item 16: My state of mind played a major part in causing my symptoms of depression
- Item 18: The loss of significant relationship caused my symptoms of depression
- Item 19: My negative thinking caused my symptoms of depression
- Item 20: Family problems or worries caused my symptoms of depression
- Item 22: My emotional state caused my symptoms of depression
- Item 23: Being overworked played a major role in causing my symptoms of depression

The second factor, which was named External Related Factor, contained 3 items listed below:

- Item 8: It was just by chance I developed my symptoms of depression
- Item 9: My symptoms of depression are a punishment from God
- Item 25: My symptoms of depression are due to my smoking

The final factor, named Medical Related Factor, contained two items:

Item 6: My symptoms of depression are due to my medical illness  
 Item 15: My symptoms of depression are a reaction to my medical illness

**Table 4-44. KMO and Bartlett Test of Sphericity (HIV Subgroup N= 106)**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.798
Bartlett's Test of Sphericity	Approx. Chi-Square	695.383
	df	171
	Significance	.000

**Table 4-45. Factor Analysis of IPQ cause subscale (HIV Subgroup N= 106)**

Factor	Item	Component Factor	Eigenvalue	Variance	Cumulative Variance
Stress Related Factor	3	.520	5.658	29.777	29.777
	10	.728			
	16	.661			
	18	.595			
	19	.689			
	20	.810			
	22	.707			
	23	.600			
External Related Factor	8	.548	1.845	16.434	46.211
	9	.749			
	25	.607			
Medical Related Factor	6	.513	1.622	14.931	61.142
	15	.663			

Each of these factors were then entered into a multinomial logistic regression, in order to ascertain if a relationship exists between the individual factors and treatment preferences indicated by the participants. None of the factors produced a statistically significant relationship with modal preferences for treatment. The Stress related factor was the only factor that produced



a statistically significant relationship with provider preferences. The final model produced a chi-square value of,  $X^2 (12, N=100) = 30.506$  ( $p < .05$ ). The stress related factor produced a chi-square value of,  $X^2 (4, N=100) = 17.561$ ,  $p = .002$  (see Table 4-46). The parameter estimates of the final model indicates that, individuals who reported moderate levels on the stress were 2.339 times ( $p = .010$ ) more likely than individuals who reported the highest levels on the stress related factor to prefer a provider combination of treatment (which included their doctor) than treatment provided solely by a psychologist/psychiatrist.

**Table 4-46. Multinomial Logistic Regression examining the relationship between the “Stress Factors” and “Provider Preferences”**

Effect	<u>Model fitting criteria</u>		<u>Likelihood ratio tests</u>	
	-2 log likelihood	Chi-square	df	Sig.
Intercept only	113.962			
Final model	83.456	30.506	12	.002**
<b>Reduced Model</b>				
Intercept	83.456 <sup>a</sup>	.000	0	
Gender	85.418	1.962	2	.375
Income	85.393	1.938	2	.380
Age	87.216	3.761	2	.153
Education	92.5.79	9.124	2	.010**
Stressrelated	101.016	17.561	4	.002**
<b>Parameter Estimates</b>	<b><u>B</u></b>	<b><u>Std. Error</u></b>	<b><u>Exp(B)</u></b>	<b><u>Sig.</u></b>
<b>PROVIDER COMBINATION</b>				
<i>Stress Related Factor</i>				
Least	-.708	.622	.830	.255
Moderate	2.236	.873	2.339	.010**

*Note: the dependent variable is “Provider Preference” reference category is “Psychologist/psychiatrist”; Predictor Variable is Stress Related Factor, reference category is “High”*

<sup>a</sup>*The intercept is equivalent to the final model.*

\*p• .05,\*\* p• .01, \*\*\*p• .001

For the diabetic subsample, The KMO for the HIV subsample analysis was .786, and the Bartlett test of sphericity produced a chi-square value,  $X^2 (105) = 365.946$   $p=.001$  for the diabetic subsample factors (see Table 4-47). Again these values met the minimum requirements to interpret the factor analysis. Three factors were identified in the final analysis (see Table 4-48).

The first factor, which was named the Stress Factor, had six items that are listed below:

- Item 11: Marriage or relationship problems led to my symptoms of depression
- Item 13: Other people play a large role in causing my symptoms of depression
- Item 18: The loss of significant relationship caused my symptoms of depression
- Item 20: Family problems or worries caused my symptoms of depression
- Item 21: My personality caused my symptoms of depression
- Item 22: My emotional state caused my symptoms of depression

The second factor, which was named the External factor, contained four items:

- Item 4: Pollution of the environment caused my symptoms of depression
- Item 14: My symptoms of depression were caused by poor medical care I received in the past
- Item 23: Being overworked played a role in causing my symptoms of depression
- Item 27: It was an accident or injury that caused my symptoms of depression

The final factor, which was named Age Limiting Factor, contained the two items listed below:

- Item 7: I have symptoms of depression because I don't take care of myself physically
- Item 24: My symptoms of depression are due to me getting older

**Table 4-47. KMO and Bartlett Test of Sphericity (Diabetic Subgroup)**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.786
Bartlett's Test of Sphericity	Approx. Chi-Square	365.946
	df	105
	Significance	.000

**Table 4-48. Factor Analysis of IPQ cause subscale (Diabetic Subgroup N= 78)**

Factor	Item	Component Factor	Eigenvalue	Variance	Cumulative Variance
Interpersonal Factor	11	.680	4.761	31.738	31.738
	13	.671			
	18	.724			
	20	.793			
	21	.573			
	22	.661			
External Related Factor	4	.710	1.915	16.424	48.162
	14	.666			
	23	.575			
	27				
Age Limiting	7	.513	1.432	12.555	60.717
	24	.663			

In the final analysis among the diabetic subsample, none of the factors predicted treatment preferences either by mode or provider.

#### *Question 7*

Q<sub>7</sub>: Among individuals with the same chronic illness, are there differences in depression scores across ethnicity?

For this question, depression was coded into 3 categories; (1) no depression, (2) mild depression, and (3) moderate/severe depression. The HIV subgroup findings revealed differences in depression scores across race/ethnicity. The final multinomial logistic analysis produced a chi-square value of,  $X^2(12, N=102) = 25.572$  that was statistically significant at the  $p \leq .05$  (see Table 4-49). This finding rejects the null hypothesis which states that no relationship exists between the independent variables and the dependent variable. Based on the final model,

race/ethnicity revealed a chi-square value,  $X^2 (2, N=102) = 12.802$   $p=.012$  (see Table 4-49). Thus the null hypothesis that no relationship exists between race/ethnicity and depression scores is rejected. Based on these parameter estimates, African Americans were 13.884 times ( $p= .004$ ) more likely than Whites to report no symptoms of depression over severe symptoms of depression (see Table 4-49). In addition, Latinos were 7.215 times ( $p= .045$ ) more likely than Whites to report no symptoms of depression over severe symptoms of depression. Overall, African Americans and Latinos were more likely no depression or mild depression over severe depression than Whites (see Table 4-49).

During the analysis with the diabetic subgroup, SPSS noted errors in the “Hessian matrix singularities.” The categories were collapsed in an effort to address this error, however the message continued to generate. The presumption was that the error message was a function of small sample size and/or an indication that one or more of the cells were empty. Future research is suggested with larger samples in order to evaluate the relationship between depression scores and ethnicity among individuals with diabetes.

**Table 4-49. Multinomial Logistic Regression examining the relationship between the “Depression Scores” and the predictor variables age, income, education, gender, and race/ethnicity.**

Effect	<u>Model fitting criteria</u>		<u>Likelihood ratio tests</u>	
	-2 log likelihood	Chi-square	df	Sig.
Intercept only	92.442			
Final model	66.871	25.572	12	.012*
<b>Reduced Model</b>				
Intercept	66.871 <sup>a</sup>	.000	0	
Age	68.654	1.783	2	.410
Income	71.691	4.820	2	.090
Education	67.341	.470	2	.791
Gender	72.646	5.776	2	.056
Ethnicity	79.673	1.802	2	.012*
<b>Parameter Estimates</b>	<b><u>B</u></b>	<b><u>Std. Error</u></b>	<b><u>Exp(B)</u></b>	<b><u>Sig.</u></b>
<b><i>No Depression</i></b>				
African Americans	2.631	.918	13.884	.004**
Latinos	1.976	.987	7.215	.045*
<b><i>Mild Depression</i></b>				
African Americans	1.449	.645	4.258	.025*
Latinos	1.468	.676	4.341	.030*

*Note: the dependent variable is “Depression Score” reference category is “Moderate/Severe Depression”; Predictor Variable is Race/Ethnicity, reference category is “White”*

*<sup>a</sup>The intercept is equivalent to the final model.*

\*p• .05,\*\* p• .01, \*\*\*p• .001

### *Question 8*

Q<sub>8ab</sub>: Are there differences in treatment preferences for depression care across illness types?

Until this point in the research, questions have been analyzed within specific illness type. However, for this question treatment preferences will be analyzed across illness types. In this analysis, there were no statistically significant findings with regard to the relationship between illness type and modality treatment preferences for the symptoms of depression. However, in a multinomial logistic regression analysis testing for a relationship between illness type and provider preference there were statistically significant findings. In this analysis, provider preference was coded 5 categories with (1) Doctor/NP, (2) Psychiatrist/Psychologist, (3) Social Worker, (4) Spiritual leader, and (5) Provider Combination.

The final model produced a chi-square value, (8, N=170) 3.132,  $p=.034$  (see Table 4.50). Based on the final model, Illness type showed a statistically significant relationship with provider preference for the treatment of depression. Illness type produced a chi-square value,  $X^2$  (4, N=170) = 7.769  $p=.050$  (see Table 4-50). The parameter estimates indicate that, Diabetics were 3.616 times ( $p= .025$ ) more likely than HIV seropositive individuals to prefer treatment with a doctor for symptoms of depression over treatment with a psychologist/psychiatrist. In addition, diabetic patients were 7.851 times ( $p= .050$ ) more likely than HIV seropositive patients to prefer spiritual leaders as treatment providers for their symptoms of depression over psychologists/psychiatrists (see Table 4-50).

**Table 4-50. Multinomial Logistic Regression examining the relationship between the “Provider Preference” and the independent variables illness type, gender, age, income, and education.**

Effect	<u>Model fitting criteria</u>		<u>Likelihood ratio tests</u>	
	-2 log likelihood	Chi-square	df	Sig.
Intercept only	238.914			
Final model	200.783	38.132	24	.034 <sup>*</sup>
<b>Reduced Model</b>				
Intercept	200.783 <sup>a</sup>	.000	0	
Age	202.951	2.168	4	.705
Income	205.138	4.355	4	.360
Education	216.048	15.265	8	.044 <sup>*</sup>
Gender	203.744	2.962	4	.564
Illness Type	208.552	7.769	4	.050 <sup>*</sup>
<b>Parameter Estimates</b>	<b><u>B</u></b>	<b><u>Std. Error</u></b>	<b><u>Exp(B)</u></b>	<b><u>Sig.</u></b>
<b><u>DOCTOR</u></b>				
<i>Illness Type</i>				
Diabetes	1.285	.575	3.616	.025 <sup>*</sup>
<b><u>SPIRITUAL LEADER</u></b>				
<i>Illness Type</i>				
Diabetes	2.061	1.054	7.851	.050 <sup>*</sup>
<b><u>PROVIDER COMBINATION</u></b>				
<i>Education</i>				
Less than High School	-1.397	.659	.247	.034 <sup>*</sup>
High School Diploma/GED	-1.629	.573	.196	.004 <sup>*</sup>

*Note: the dependent variable is “Provider preference” reference category is “Psychologist/Psychiatrist”; Reference category for Illness type is “HIV”*

*<sup>a</sup>The intercept is equivalent to the final model.*

*\*p• .05,\*\* p• .01, \*\*\*p• .001*



## **CHAPTER 5**

### **DISCUSSION AND IMPLICATIONS**

#### **SUMMARY OF THE STUDY**

In this chapter, the investigator will present the purpose of the project, limitations, interpretations of the data analyses, discussion, and recommendations in light of the theoretical framework and the empirical literature. The presentation will follow the format of the results section which was organized by the eight (8) research questions.

The purpose of this project was to explore how chronically ill patients of different racial/ethnic groups causally attribute symptoms of depression and to determine which treatments and providers were preferred for the symptoms of depression across race/ethnicity after controlling for certain demographic variables. In addition the project sought to determine if differences in depression scores across race/ethnicity remained when a chronic illness was acquired. In an attempt to show the importance of continued research in this area and in the absence of sufficient literature to inform the study, this study utilized a theoretical framework to guide the exploratory nature of the research. An integrated modified version of The Self-Regulatory Model of Illness (Leventhal et al., 1992) and the Theory of Reasoned Action (Fishbein & Ajzen, 1975) was used as the theoretical framework. Thus a preliminary predictive model of treatment preferences for symptoms of depression among patients with the same illness type of various ethnic groups was tested for goodness-of-fit on the theorized relationships proposed. Limitations that were identified in the study will also be discussed in more detail throughout this chapter.

This study contained eight (8) research questions, seven of which were analyzed for both the HIV and diabetic subgroups. Research question eight (8) compared the HIV subgroup to the diabetic subgroup with regard to treatment preferences by mode and provider. Binary and multinomial logistic regression models were used to test the null hypothesis that no relationship existed between the dependent variable(s) and the independent variable(s). Causal beliefs were the dependent variable for research questions 1 and 4. Causal beliefs were entered in the statistical model as a dichotomous variable, with two levels of *agree* and *disagree*. For research questions 2, 6a and 8a, the dependent variable, treatment preference (mode), was entered as a categorical variable with three levels, *medication*, *counseling*, and *combination treatment (medication and counseling)*. For research questions 3, 6b, and 8b the dependent variable, provider preference, was entered into the statistical model as a categorical variable with four levels, *Doctor/NP*, *Psychiatrist/Psychologist*, *Social Worker*, and *Provider Combination*. In research question 5 and 7, the dependent variable, depression scores, was entered into the statistical model as a categorical variable using two separate statistical models: 1) as a dichotomous variable with levels of *no depression* and *depression*; and 2) as a categorical variable with three levels of *no depression*, *mild depression*, and *severe depression*.

Demographic variables, were also included in the analysis of research questions 1-3 and 5-8. Statistical testing of the specified research questions across the two illness types rendered noticeably different results. The HIV subgroup, produced statistically significant relationships six (6) of the eight research questions. Within the diabetic subgroup, only two of the research questions produced statistically significant relationships among the predictor variables and the dependent variable. The final analysis, in which illness types were compared to examine if

differences in treatment preferences (mode and provider) existed, also produced significant findings with regard to provider preferences.

### ***Limitations***

Although this was not an experimental design, certain threats to external validity may have limited the study findings and are discussed in this section.

### ***External Validity***

Threats to external validity impact the generalizability of the findings to other samples, settings, and practice environments. Two aspect of the study that made it exploratory in nature, was the sampling and sample size.

*Sampling.* The convenience sampling method limited the study's ability to generalize any significant findings to a wider chronically ill population. The sample was drawn from three centrally located facilities in Austin that predominately service African Americans, Latinos, individuals from low socioeconomic statuses (SES), and indigent populations. Thus there were limitations to heterogeneity based on race/ethnicity and income. The research sample was predominantly Latino and African American for both the HIV and the diabetic subgroups. In addition, the majority of the sample was from low SES with 76.4% of the HIV subsample and 47.4% of the diabetic subsample making less than \$10,000 dollars a year. However, both the HIV and the diabetic subgroups were closely reflective of the urban population from which they were recruited. In addition, within the diabetic subgroup, there was very little variance in many of the predictor variables that made it difficult to detect subtle differences in predictive ability relative to provider preference, differences in depression scores, and in some causal beliefs. Additionally, many of the subjects were recruited from a healthcare setting, indicating that many of the subjects already may have shown a preference for treatment with a physician or nurse

practitioner for symptoms of depression. These concerns limit the generalizability of the findings primarily to African American and Latino individuals with HIV or diabetes who are from lower socio-economic statuses in the Central Austin Area.

*Sample Size.* Small effect sizes were assumed in the calculation for the appropriate sample size in this study. It was initially determined that a sample size of 175 would be sufficient to accommodate missing data. However, after gathering the data, the researcher realized that there were statistically significant differences between the HIV subgroup and the diabetic subgroup. These differences indicated that additional participants were needed particularly in the diabetic subgroup. However, time and budget constraints restricted further recruitment of diabetic participants, and resulted in a diabetic subsample of  $N = 78$ . Based on Rubin and Babbie (2005), limitations of exploratory research such as sampling and sample size, impede on researcher's ability to generalize findings to a larger population.

Due to the small sample sizes within the subgroups, some variables were dichotomized or placed into categorical ranges to enable the analyses. Despite the small sample size in the diabetic subsample, several relationships tested were found to be statistically significant. In the HIV subsample, all of the research analyses produced statistically significant findings. Therefore, the lower than desired sample did not totally preclude testing of the research questions or finding significant results. For the research questions in the diabetic subsample that did not reach significance, it is hypothesized that an increased sample size would have increased the probability of finding statistically significant relationships. Thus additional research is needed with a larger diabetic subpopulation to test whether or not statistical significance can be attained in regard to provider preferences, the explanation of the differences in depression scores both in regard to the number of physical symptoms and ethnicity, as well as causal beliefs in

relation to the number of physical symptoms of physical illness and in predicting treatment preferences.

### ***Variables that needed further exploration***

During the course of the study, some variables appeared to need additional questions or qualitative analyses in order to better understand the role that the variables were playing in the participant's response(s). For instance, the role of spirituality, religion, and God in regard to individual causal beliefs about symptoms of depression was unclear. The study only asked two questions to capture individual beliefs about these three variables. In retrospect more questions needed to be asked to better understand differences with regard to the role that spirituality, religion, and God individually play on causal beliefs for symptoms of depression.

In addition, many of the participants expressed difficulty in distinguishing the difference between certain providers, particularly in regard to psychiatrists, psychologists, and social workers. Many questions were addressed related to which of these three providers could provide certain types of treatments (i.e. medication, counseling) and in what settings (i.e. private practice, doctor's offices). Consideration should be given to further exploring these variables in future research studies focusing on these populations.

## **Descriptive Analysis**

### ***HIV***

The descriptive analysis of the characteristics of the HIV subsample revealed that 54.8% of the sample was between the ages of 40 and 49. Nationally, 29.4% of individuals with HIV/AIDS between the years of 2001 through 2005 fell between the ages of 40 and 49 (CDC, 2005). No age specific data could be located for the state of Texas. With regard to the

race/ethnicity of the HIV sample in this study, the majority of the sample were African American (47.1%), followed by Latinos (30.8%), and then Whites (22.1%). Cumulatively in Texas, Whites are the largest group of HIV/AIDS cases making up 47.7% of all cases. However, in recent years African Americans have made up 60.5% of new HIV/AIDS cases in Texas, followed by Latinos, who accounted for 15% of new HIV/AIDS cases (CDC, 2006). Considering the more recent data, the racial/ethnic composition of the current study seems to proportionately match that of the current status of new cases in the state of Texas. The gender composition of the HIV subgroup, was 74.5% male and 24.5% female, which closely matches the gender composition found in the state of Texas of 85.9% and 14.1%, respectively. Finally, 76.4% of the HIV subsample reported making less than \$10,000 dollars a year. Texas reported that 65% of individuals receiving assistance through the AIDS Drug Assistance Program (ADAP) fell beneath the federal poverty level of \$9,570 dollars. Given this data, again the income distribution of the HIV subsample appears to appropriately represent the income distribution found in the state of Texas.

### ***Diabetes***

The descriptive characteristics of the diabetic indicated that 35.9% of the subsample ranged in age of 50 to 59. Based on state data, the 17% of individuals between the ages of 50 and 59 reported being told by a physician that they have diabetes. However, the data also reports that the risk of diabetes increases with age (Texas Department of Health, 2001). The data from the diabetic subgroup also reveals that Latinos represented 52.6% of the sample, African Americans represented 30.8% and Whites made up 16.7%. Texas data reports larger numbers of African American and Latinos being diagnosed with diabetes (Texas Department of Health, 2001). With regard to education, the diabetic subsample revealed that the largest portion of the sample had less than a high school education (41%) and who reported making less than \$10,000 dollars per year (47.4%). Based on the Texas state data, the prevalence of diabetes was also

highest (44.5%) among individuals with less than a high school diploma and among individuals who made less than \$15,000 dollars a year (37%) (Texas Department of Health, 2001). With regard to gender, the diabetic subsample was predominantly female, 64.1%. This data was higher than that reported by the state. In Texas, there are slightly more women than men who have been diagnosed with diabetes but the difference was not found to be statistically significant. There may be several reasons why more women were enrolled in this study. First, based on US Census data reports more women are living below the poverty level (U.S. Census, 2005). Since, the service sites tended to service individuals from low socioeconomic statuses, it may be likely that this impacted the sampling.

In sum, the characteristics of this study's subgroups appear to be comparatively proportionate to the same populations in Texas. The differences between the study's sample of HIV seropositive and diabetic individuals and those populations in Texas appear to be a reflection of the study settings. The study's settings tended to service predominately groups from lower socioeconomic classes, Latinos and African Americans. Thus, care must be taken in generalizing the study's findings to local, regional, and/or state population variances. The following sections will discuss the remaining findings of the study.

#### **DISCUSSION OF RESEARCH QUESTION 1:**

##### **Are there differences in causal attributions of depressive symptoms among chronically ill patients of different ethnic groups?**

This question was derived from the study's theoretical relationships illustrated in Figure 4.3, which indicates that age, gender, income, education, depression, and race/ethnicity may impact causal beliefs about illness. The theoretical relationship between the predictor variable, race/ethnicity, was statistically supported, which rejected the null hypothesis. The following section discusses the findings of causal attributions of depressive symptoms differences across ethnicity.

## ***HIV***

There were eleven causal beliefs that were found to exhibit a statistically significant relationship with one or more of the predictor variables. Only 5 of these causal beliefs produced statistically significant relationships with race/ethnicity. The first of these beliefs that had a statistically significant relationship with race/ethnicity was the belief that “a germ or virus caused symptoms of depression.” In this analysis, Latinos were found to be 5.140 times more likely than Whites to agree that “a germ or virus caused symptoms of depression.” Additionally, individuals with severe depression scores on the PHQ inventory were 4 times more likely than individuals with no depression on the PHQ inventory to also agree that “a germ or virus caused symptoms of depression.” The second belief that produced a statistically significant relationship with race/ethnicity was the belief that “the death of a loved one caused my symptoms of depression.” Based on this analysis, Whites were found to be 3 times more likely than African Americans to believe that their symptoms of depression were caused by the death of a loved one. The third belief, “my symptoms of depression are hereditary,” revealed that Whites were 5 times more likely than Latinos to believe that their symptoms of depression were hereditary. In addition, individuals with severe depression scores on the PHQ inventory were also more likely to believe that their symptoms of depression were hereditary than individuals with mild depression scores. Next, Whites were found to be 5 times more likely than African Americans and Latinos to believe that stress caused their symptoms of depression and Whites were also 4 times more likely than African Americans to believe that poor medical care caused symptoms of depression. Finally, it was found that HIV positive Latinos were less likely than Whites to attribute their symptoms of depression to heredity. In addition, HIV positive African Americans were less likely than Whites to attribute symptoms of depression to poor medical care.

There were only two other predictors that were found to produce statistically significant relationships with individual causal beliefs. PHQ produced statistically significant relationships



with eight of the causal beliefs. Individuals with severe depression scores on the PHQ inventory were as much as 4 times more likely than individuals with no depression on the PHQ inventory to believe that their symptoms of depression were caused by a germ or virus. Individuals with severe depression scores were also more likely than individuals with mild depression scores on the PHQ inventory to believe that their symptoms of depression were hereditary. Additionally, individuals with severe depression scores were 5 times more likely than individual with no depression scores and almost 3 times more likely than individuals with mild depression scores to believe that their symptom of depression were a reaction to a medical illness. In fact, severely depressed individuals according to the PHQ inventory were also more likely than individuals with no depression to believe that their symptoms of depression were caused by (1) a loss of a significant relationship, (2) their negative thinking, (3) their emotional state, and (4) an altered immune system.

Finally, age, as a factor, produced a single statistically significant relationship with the causal belief that ‘symptoms of depression are due to a medical illness,’ in that, individuals who were 50 years of age or older were more likely to agree with this causal belief than individuals who were younger than 50 years of age.

### **Implications for Practice**

The current findings revealed that race/ethnicity plays an important role in causal attributions of symptoms of depression among HIV seropositive individuals. For HIV positive individuals in this study, Latinos believed that their symptoms of depression like their physical illness, were caused by a germ or virus. This may indicate that they do not separate the symptoms of physical illness from their symptoms of psychological distress and thus may be more prone to seek care for their symptoms of depression in the primary medical setting. Moreover, African Americans and Latinos also were less likely than Whites to attribute their

symptoms of depression to stress or stressful life events. This would make it important for those working in primary care settings to be aware that African American and Latino seropositive individuals may not express or attribute symptoms of depression in terms of psychological distress and thus the provider may need to pay closer attention to unexplained somatic indicators as signs of depression in this subgroup of HIV seropositive individuals. In fact, the literature in the general African American and Latino populations indicate that these groups may be more prone to express symptoms of depression in somatic complaints and more likely to seek assistance for these symptoms of depression in the primary medical sector (Brown, Abe-Kim, & Barrio, 2003; Brown & Schulberg, 1998; Brown, Schulberg, & Madonia, 1996; Salman, Liebowitz, Guarnaccia, Jusino, Garfinkel, 1998).

Although, several case-finding instruments exist to aid physicians in identifying individuals with depression, some argue that the differences in the expression of depression across ethnicity hinder the physician's ability to accurately identify numerous cases of depression (Neighbors et al., 2003; Sue, 1988; Williams, 1986). In addition, time constraints and competing demands may impede on the physician's ability to accurately assess and diagnose cases of depression. Particularly, physicians in fast paced primary care settings that service HIV/AIDS seropositive individuals who are Medicaid/Medicare insured or uninsured are at an increased disadvantage. These concerns may present a unique opportunity for social workers to be integrated into primary care settings that primarily service chronically ill individuals to aid in assessment, diagnosis, and treatment of depression. This interpretation of the findings is consistent with other research which indicates that the integration of a behavioral health professional, such as a social worker, improves mental and physical health outcomes of patients in primary care settings (Katon, von Korff, Lin, Walker, Simon, Bush, Robinson, & Russo, 1995;

Katon, Rutter, Ludman, von Korff, Lin Simon, Walker, Unutzer, Bush, Russo, & Ludman, 1999).

The fact that Latinos in this study were prone not to attribute their symptoms of depression to heredity may have several implications. First, stigma with regard to mental illness in this society is still very prominent, especially within Latino communities (Harris, Edlund, & Larson, 2005). Thus to attribute what is perceived as weakness or as being crazy to one's family would not be culturally acceptable. The second reason may be the relationship between education and race/ethnicity. The literature indicates that more educated individuals are more likely to be better informed about depression and other psychological illnesses. It is also known that Whites are more likely to obtain a high school diploma and receive additional higher education than both African Americans and Latinos. Thus, populations of color may be less informed about the role that biology may play in chemical balances, or, in the case of depression, chemical imbalance. In both cases, stigma and education, it would seem necessary to take special precautions with populations of color to make sure that they are educated with regard to possible causes of depression (both biological and environmental), the culturally relevant indicator of depression, and available treatment options. In addition, research on stigma indicates the more public exposure, community distribution of information, and public awareness campaigns through various media can reduce the stigma associated with mental illness (Corrigan et al., 2000, Namie-news, 1998).

It also seems relevant to mention that seropositive African Americans revealed a tendency to be more likely than seropositive Whites to believe that their 'symptoms of depression were a punishment from God.' This tendency may be an indicator that African American seropositive individuals may be more likely to equate their symptoms of depression

with their spiritual or religious affiliation or lack thereof. This may also be an indicator that this group may want treatment for their symptoms of depression that incorporates their spirituality. Research in the general African American population indicates that spirituality and religion is a very important part of the lives of African Americans (Taylor, Chatters, and Levin, 2004). This may again, lend support to the need for collaborative care teams which may need to include clergy, particularly when working with African American populations. However, more research evaluating the role that spirituality and religion may play in causal beliefs needs further exploration.

As suggested by the theoretical framework used in this study, the presence of depression clearly impacts how HIV positive individuals perceive their symptoms of depression. Based on the findings, severely depressed individuals were more likely to attribute their symptoms of depression to several causes, most of which were a reflection of their mental state. For instance, severely depressed individuals were more likely to attribute symptom of depression to loss, negative thinking, and emotional status (feeling down, lonely, anxious, or empty). However, severely depressed individuals were also more likely to relate symptoms of depression to their physical body, in that, they also felt that their symptoms of depression were due to or a reaction to their medical illness. In addition, severely depressed individuals were more prone to believe that their altered immune system was responsible for causing symptoms of depression and were also more likely to believe their symptoms were caused by a germ or virus. All of these descriptions may be very appropriate given the intensity of depression experienced by these individuals. As mentioned in earlier chapters, individuals who experience severe depressive episodes, tend to remain depressed for long periods of time and have several relapses of depression within shorter intervals (Diagnostic and Statistical Manual, fifth edition: APA, 2001;

Kupfer, Frank, & Perel et al., 1992). This pattern of depression also has proven to produce a more heightened sensitivity to stimuli. Thus severely depressed individuals may be more prone to attribute or feel as though many things impact their depression. In addition, individuals with co-occurring depression and chronic illness have been found to experience more frequent and severe depressive episodes. As noted earlier the presence of comorbid depression and chronic medical illness often times results in amplified somatic symptoms and increased functional disability (Leo, Sherry, & Jones, 1998).

Finally, individuals 50 years of age or older were more likely than their counterparts to attribute their symptoms of depression to a medical illness. This may be due to the fact that as individuals get older symptoms of physical illness may become more prominent and more debilitating. The loss associated with chronic physical illness has been indicated as putting individuals at increased risk of depression and the risk has been found to increase as symptoms of chronic illness get worse (i.e. severity, frequency, duration, and number of symptoms). Older patients are more likely to have multiple chronic conditions and thus have been found to be 3 to 5 times as likely to be depressed as younger patients without chronic conditions (Von Korff, Dworkin, Le Resche, & Kruger, 1988).

### ***Diabetes***

Within the diabetic subgroup, sixteen causal beliefs produced statistically significant relationships with one or more of the predictor variables. Seven of these causal beliefs were identified as having a statistically significant relationship with race/ethnicity. The first was the belief that 'A germ or virus caused symptoms of depression.' Whites were 5.78 times more likely than Latinos to agree that 'A germ or virus caused [their] symptoms of depression,' and 5.78 times more likely to believe that a medical illness caused their symptoms of depression.

Whites were also more than 5 times as likely as Latinos to believe that “others had played a major role in causing their symptoms of depression.” Additionally, Whites were 4.807 times more likely than Latinos to believe that their ‘symptoms of depression [were] caused by poor medical care in the past,’ and Whites also were 14 and 11 times more likely than African Americans and Latinos, respectively, to believe that their symptoms of depression were a reaction to [their] medical illness. Moreover, Whites were also more likely than African Americans (10.526 times more likely) and Latinos (3.98 times more likely) to attribute their symptoms of depression to their own negative thinking. Finally, Whites were 17 times more likely than Latinos to attribute smoking as a causal factor for symptoms of depression.

PHQ score was found to be statistically associated with eight causal beliefs, most of which were associated with stress or stressful life events. Based on this observation, it would seem appropriate that those who were more severely depressed were more likely than individuals with no depression to attribute their symptoms of depression to (1) the death of a loved one (13 times more likely), (2) stress (5 times more likely), (3) loss of a significant relationship (16 times more likely), (4) family problems or worries (11 times more likely), and (5) their emotional state (21 times more likely). In addition, severely depressed individuals based on the PHQ inventory were also more likely to attribute their symptoms of depression to their personality and heredity than individuals with no depression and more likely to attribute symptoms of depression to an altered immune system than individuals with mild depression.

Age produced statistically significant relationships with six causal beliefs. First, diabetic individuals who were 50 years or older were twice as likely as their counterparts to believe that their symptoms of depression were hereditary. The remaining beliefs were more likely to be endorsed by individuals who were younger than 50 years of age, in that, they were 4 times more

likely to believe that the loss of a significant relationship and their emotional state had caused their symptoms of depression than individuals who were 50 years or older. In addition, individuals who were younger than 50 years of age were approximately three times more likely than individuals 50 years or older to attribute symptoms of depression to family worries and negative thinking. Finally, the younger proportion of the subgroup was more likely to feel that their depression was due to them getting older than those 50 years or older.

### **Implications for Practice**

The current findings again reveal the important role that race/ethnicity plays in causal attributions of symptoms of depression among individuals with diabetes. While Latinos, in the HIV subgroup were more prone to believe that a germ or virus had caused their symptoms of depression, Latinos in the diabetic subgroup were more likely to disagree that ‘A germ or virus caused their symptoms of depression.’ In this instance, it would appear that not only does race/ethnicity impact how individuals attribute symptoms of depression, but illness type may also be a factor that needs to be considered. This finding in the differences across illness type in terms of causal beliefs is also supported by the theoretical model used to describe the relationship between the variables (see Figure 2.3), in which chronic medical condition is predicted as a impacting factor in causal beliefs.

Within the diabetic subgroup, African Americans and Latinos were less likely to believe that their negative thinking had caused their symptoms of depression. This finding seems to support the literature which indicates that both African Americans and Latinos are more likely to describe their symptoms of depression in somatic terms rather than psychological terms (Brown, Schulberg, & Madonia, 1996; Escobar, Rubio-Stipec, Canino, & Karno, 1989). Additionally, this finding also seems to support findings from previous studies that individuals from African

American and Latino descent are more likely to see their symptoms of depression in relation to the physical body or as a physical illness and thus seek treatment from a physician rather than a specialty mental health provider. Another finding of this study that seems to support this earlier research, is that Latinos were less likely to attribute symptoms of depression to stress imposed by others. In total these beliefs seem to indicate that stressful encounters with others and/or psychological state are not equated as causing DSM-IV symptoms of depression within these racial/ethnic groups. However, others might argue that certain racial/ethnic groups may not express or verbalize symptoms of depression in a classic westernized way (Brown, Schulberg, & Madonia, 1996; Fabrega, Mezzich, & Ulrich, 1988; Whaley, 1997). Thus focusing on African American and Latino clients' descriptions of their psychological state may not be a good assessment tool for depression among these groups.

Additionally, diabetic African Americans and Latinos were less likely than Whites to see their symptoms of depression as a reaction to their medical illness. Latinos were less likely to attribute symptoms of depression to a medical illness, which again seems to indicate that the depression symptoms experienced are not perceived as a reaction to a medical illness. One might presume this finding might again indicate that these two groups do not separate physical illness from psychological distress. Thus they do not perceive symptoms of depression as a reaction to their physical illness but a part of it.

Next, "poor medical care" was less likely to be determined by diabetic Latinos than Whites as causing symptoms of depression. This belief concerning 'poor medical care' may be an indication that medical care, even if it is not so good, may be seen as a form of relief for symptoms of depression for this group.



As indicated earlier, the presence of depression seems to impact how individuals perceive their symptoms of depression. In the diabetic subsample, severely depressed individuals were more likely to attribute their symptoms of depression to causes that were a reflection of their psychological state. Severely depressed individuals with diabetes were more likely to attribute symptom of depression to death, stress, loss, family worries, their personality, and their emotional state (feeling down, lonely, anxious, or empty). In addition, severely depressed individuals from the diabetic subsample were also more likely to relate symptoms of depression to heredity and their immune system. These attribution patterns, similar to those found in the HIV subgroup, seem to highlight just how overwhelming co-occurring chronic physical illness and severe depression can be on the experiences and perceptions of the individual. However, severely depressed individuals may experience cognitive distortions that have the tendency to impede on the individual's ability to attribute their symptoms appropriately (Brown et al., 2001). However in this subgroup it appears that the attribution styles among those with the highest depression scores were not distorted. In fact, their descriptions of indicators that seem to have caused their symptoms of depression are very common indicators that individuals endorse as causes of symptoms of depression.

Based on the research, a history of major depression increases the risk for the development of type 2 diabetes by as much as twofold (Eaton, Armenian, Gallo, Pratt, Ford, 1996) and individuals with comorbid diabetes and major depression have been found more likely to be non-adherent to medication regimes and doctor recommended life style changes than diabetic individuals without major depression (Ciechanowski, Katon, Russo, 2000). Again, these findings indicate the need to correctly identify and treat individuals with major depression. This is especially important to individuals with chronic conditions in which non-adherence to

treatment can lead to secondary complications such as kidney failure, blindness, amputations, heart problems, as well as immediate dangers of loss of consciousness and sudden death (Leventhal, Diefenbach, & Leventhal, 1992). However, several factors impede primary care physicians' abilities to identify these individuals in a timely manner. First, time constraints in the primary care setting prevent physician's ability to conduct in-depth interviews needed to detect depression. Secondly, competing demands in the primary medical setting may also hinder the physician's ability to accurately identify cases of depression. The cases of depression that primary care physicians are likely to encounter more than likely will have coexisting medical conditions. Since, primary care settings are designed to treat physical illness, the symptoms of depression may go unrecognized. In addition, patients may also be less likely to emphasize symptoms of psychological distress in the primary medical setting and thus the physician focuses on those symptoms most emphasized by the patient and may not attune to or symptoms that may take more time to address (Klinkman, 1997). Finally, the lack of expertise in diagnosing and treating depression by primary care physicians impact their ability to identify and appropriately treat individuals for depression. These impeding factors again seem to present a great opportunity for interdisciplinary teamwork. In some primary care settings, chronically ill patients are case managed by a disease management specialist, usually a nurse. This individual assesses the patient's health status and needs by monitoring the patient's medications, test results, and health outcomes in a more comprehensive manner. In cases where patients seem to be non-adherent to medications or who may seem to be exhibiting signs of health debilitation, this individual could then be assessed by a trained behavioral health specialist, such as a social worker. In addition, individuals who may be at increased risk for developing type 2 diabetes may also be assessed for depression by a social worker in these settings.

The overall findings of this study bring the researcher to the following conclusions. First despite treatment setting, it is important that providers understand the role of cultural influences on causal beliefs, verbal expressions and manifestations of depression as well as help seeking patterns of populations of color. According to previous literature and the causal beliefs of the individuals in this study, African Americans and Latinos may be less likely to see their symptoms of depression in relation to their psychological state and more likely to relate their symptoms of depression as a part of their physical illness. Moreover, African American HIV seropositive individuals may tend to accentuate the symptoms with regard to their spiritual selves. Both of the latter two statements seem to support the use of collaborative treatment models for symptoms of depression among chronically ill diabetic and HIV seropositive patients. Collaborative models of care would allow physician's to continue to see the number of patients regularly seen in a given day, while patients that may need additional time and follow-up could be seen and assessed by behavioral health providers. In addition, a health care managers could be incorporated in the team to assist individuals in obtaining lay ministerial counseling if they preferred. All of the team members would work in collaboration with the patient's physician to coordinate care.

It is also important to note that the findings concerning the relationship between causal beliefs and the main predictor variables also indicate that it may be just as important for providers to understand that cognitive schemas differ in regard to the causes of depression based on ethnicity, severity of depression, physical illness, age, gender, and social economic conditions.

## **DISCUSSION OF RESEARCH QUESTION 2:**

### **Which treatments for depressive symptoms are preferred by different ethnic groups with the same illness type?**

This question was derived from the study's theoretical model which indicated that age, gender, income, and illness type as well as, race/ethnicity have a direct and indirect relationship with treatment preferences. The theoretical relationship between the main predictor variable, race/ethnicity was statistically supported, which rejected the null hypothesis. The following section discusses the findings of treatment modes that are preferred by different racial groups with similar illness types.

Findings from the HIV subgroup revealed that, Latinos were more likely to prefer single forms of treatment (medication or counseling) than Whites who tended to prefer combination treatment approaches. In addition, it was found that women were more likely than males to prefer counseling for the treatment of their symptoms of depression. No significant differences in treatment preferences were identified between African Americans and Whites.

In the diabetic subgroup, Latinos were again more likely to prefer counseling over a combination form of treatment than their White counterparts and Whites were more likely to prefer medication over a combined form of treatment than their Latino counterparts. These findings again seem to highlight the role that chronic illness plays. In the analysis with the HIV group, Latinos clearly preferred both forms of unconnected treatments over combined treatment approaches than Whites. While, in the diabetic subgroup the same racial/ethnic groups both preferred unconnected forms of treatment approaches than combined approaches. In both cases, Latinos were found to be significantly different from their White counterparts with regard to treatment choice for symptoms of depression, but the treatment choices differed across the different illness types. Finally, in both illness types women were more likely than men to prefer

counseling over combined forms of treatment. Although, illness type appears to impact treatment preferences across ethnicity, it seems not to affect preferences across gender.

### **Implications for Practice**

The finding for treatment preferences from the diabetic subgroup support previous research in the primary medical sector which indicates that Latinos are more likely than their White counterparts to prefer some form of counseling over medication alone (Cooper et al., 2003; Dwight-Johnson, Lagomasino, Aisenberg, & Hay, 2004; Houston, Ford, & Patrick, 2000). However, the treatment preference findings from the HIV subgroup do not support these findings. In this group, Latino individuals were more likely than their White counterparts to prefer both medication and counseling as treatments for their symptoms of depression over combined treatment approaches. These findings may be causal of the perception of cost associated with combined treatments. However, these differences in the findings for treatment preference appear may also be associated with illness type. Since illness type and race/ethnicity appear to impact treatment preferences for symptoms of depression, it will be important that individuals working in settings likely to encounter several illness types consider both race/ethnicity and illness type as indicators when assessing which treatments may be best suited for individuals suffering with symptoms of depression. In addition, further research incorporating a more rigorous design is needed to ascertain what unique characteristics of HIV, may be impacting treatment preferences within this group. Furthermore, differences between African Americans and Whites in this study were not statistically significant. However, this may have been a limitation of the sample size; thus further research is needed to determine if differences actually do exist with regard to treatment preference between African Americans and Whites of similar illness types.

### DISCUSSION OF RESEARCH QUESTION 3:

#### **Which provider do different ethnic groups with the same illness type, prefer to provide treatment for the symptoms of depression?**

There were no statistically significant findings with regard to provider preferences between any of the racial/ethnic groups within either illness type. However, the findings from the HIV subgroup may still provide information for clinical significance due to the fact that the final model was close to the statistically significant criterion of  $p = .05$ . HIV seropositive African Americans and Latinos showed a tendency to prefer doctors for the treatment of depressive symptoms than their White counterparts. In fact, African Americans were almost 5 times as likely ( $p = .074$ ) and Latinos were almost 6 times as likely ( $p = .056$ ) than Whites to prefer a doctor over a psychologist/psychiatrist for the treatment of depression.

This finding seems to support literature in the general primary care patient population which indicates that African Americans and Latinos are less likely to seek assistance from the specialty mental health sector and more likely to seek help from a primary care doctor. Based on the literature and the cautionary interpretation of the current research findings, it would seem important for physicians to recognize that populations of color are more likely to seek assistance for their symptoms of depression in the primary care setting. Additionally, physicians need to be able to appropriately diagnose symptoms of depression. However, several barriers have been identified to this end. First, physicians' training traditionally has lacked or failed to provide adequate psychiatric education in their medical schools and residencies (Cohen-Cole et al., 1993). Secondly, time constraints impede physicians' abilities to perform in-depth interviews that are needed to elicit information that may help them better assess psychiatric symptoms. Next, competing demands in the primary care setting may cause the physician and the patient to

focus on physiological symptoms most emphasized by the patient and ignore distress or other psychological concerns that may take more time to address (Klinkman, 1997). Lastly, patient stigma about mental illness may affect willingness to present purely affective symptoms to the physician. Thus, patients may conceal symptoms of depression or describe and attribute symptoms in relation to other medical concerns (Klinkman, 1997). These barriers emphasize a need for evaluating the current disease management model of care, especially for patients of color and the chronically ill. Under the current model, populations of color and chronically ill patients' symptoms of depression are more likely to go unrecognized or under-treated which often results in poorer health outcomes. The current literature suggests that collaborative models of care, which incorporate a behavioral health provider into the primary medical setting to collaborate with the physician for the treatment of mental illness, have proven to be effective in improving health outcomes among patients (Katon, Von Korff, Lin, Simon, Walker, Unutzer, Bush, Russo, & Ludman, 1999).

Among the diabetic subsample, the lack of statistically significant findings may again be attributed to sample size, particularly with regard to the smaller number of White participants in the study. Smaller sample sizes have the potential to impede the researcher's ability to make comparisons across groups due to limited variability and very small number of responses in each of the cell categories. Based on this limitation, it is recommended that future research incorporate larger samples of diabetic patients that have more proportionate representation across all ethnicities in order to evaluate if a relationship does exist between provider preference and race/ethnicity.

#### **DISCUSSION OF RESEARCH QUESTION 4:**

##### **Does the number of symptoms of physical illness impact how patients attribute symptoms of depression?**

This research questions was derived from the theoretical model, in that symptoms of physical illness impact how individuals experience their chronic medical condition. It has been found that more adverse symptoms of physical illness will negatively impact how the individual feels about the prognosis of their illness (Koike, Unutzer, & Wells 2002; Von Korff, Dworkin, Le Resche, & Kruger, 1988). Since chronic medical illness has been shown both in the theorized relationships and in the findings of this study, to impact causal beliefs then one could also presume that the number of symptom of physical illness would also impact causal beliefs.

Within the HIV subsample, the number of symptoms of physical illness did produce statistically significant relationships with several causal beliefs. In the first causal belief, marriage or relationship problems caused my symptoms of depression; individuals who reported 1-3 symptoms of their chronic illness were more likely to agree that this belief caused their symptoms of depression than individuals who reported 7 or more symptoms of their chronic illness. However, those who reported 7 or more symptoms of physical illness were more likely to attribute their symptoms of depression as a reaction to their medical illness.

In a separate analysis of the diabetic subgroup, no statistically significant relationships were established between the number of symptoms of physical illness endorsed and causal beliefs in regard to symptoms of depression. However, some relationships almost reached statistical significance and these relationships will be discussed in regards to the potential clinical relevance. In this analysis, individuals who reported 5 or more symptoms of illness were more likely than individuals who reported a 3-4 symptoms of illness to believe that stress played a



major role in causing symptoms of depression and were more likely than individuals who reported 1-2 symptoms of illness to believe that family problems or worries caused their symptoms of depression.

This subgroup's inability to establish statistical significance in this relationship continues to be attributed to the smaller sample size and the limited variability within the group.

Especially since some of the beliefs were found to almost produce statistically significant relationships with the predictor variable. More research with larger sample sizes of diabetic patients to evaluate if statistically significant relationships can be demonstrated between physical symptoms of illness and causal beliefs of symptoms of depression.

### **Implications for Practice**

The findings from this research question are quite interesting. First, individuals who reported the least symptoms of physical illness seem to recognize the role that others or external pressure plays in causing symptoms of depression. Yet, individuals who reported the most symptoms of physical illness seem to not be able to separate symptoms of depression from their medical illness. This finding is not surprising. As noted earlier, many symptoms of depression and chronic physical illness may overlap, making it difficult for an individual experiencing many different symptoms to differentiate the causes (Kroenke, Spitzer, Williams et al., 1994; Simon, Von Korff, Piccinelli, Fullerton, & Ormel, 1999). An individual who is experiencing mild symptoms may be more able to recognize when symptoms are not necessarily related to their physical illness.

Based on the above findings, it still seems necessary to assess chronically ill patients for depression on a regular basis. However, in addition to assessment, it would also seem necessary to monitor the number of symptoms of physical illness that an individual may be experiencing at

any given time. Due to the cyclical relationship between depression and physical illness, in which depression may exacerbate symptoms of physical illness and physical illness or the medications to treat physical illness may also impact symptoms of depression, it may also be necessary to spend time with patients educating them symptoms specific to their chronic illness, symptoms more specific to depression, and symptoms that may be related to both. During routine medical work-ups it may also be advantageous to also perform mini-mental status exams in order to better anticipate those symptoms that may be more related to depression. However, time constraints imposed on many physicians in medical setting may preclude them from being able to follow both symptoms of physical illness and symptoms of mental distress as well as appropriately treat and manage the treatments for both. These findings, recommendations, and limitations of health care settings seems to again support the idea of collaborative team efforts which incorporate a behavioral health manager, particularly in settings most likely to treat individuals with chronic physical diseases.

#### **DISCUSSION OF RESEARCH QUESTION 5:**

##### **Does the number of symptoms of physical illness impact depression scores?**

This research question was developed from the literature which indicates that depression may be a reasonable response to an individual experiencing loss from chronic illness. In addition, some research has found that as symptoms of chronic illness get worse (i.e. severity, frequency, duration, and number of symptoms), chronically ill patients are 3 to 5 times more likely to be depressed than patients without chronic conditions (Von Korff, Dworkin, Le Resche, & Kruger, 1988). Among patients presenting with a chronic illness, depression scores were significantly higher than those who reported no chronic illness (Mills, 2001).

Within the HIV subgroup, the number of symptoms of physical illness endorsed by a participant was shown to have a statistically significant relationship with PHQ scores.

Individuals who reported 3-4 symptoms of physical illness were 7 times more likely to have no depression on the PHQ inventory than those who reported 7+ symptoms. An inversion of this odds ratio, thus also indicates that individuals who reported the 7+ symptoms of physical illness were more likely to have depression based on the PHQ inventory. This finding clearly supports previous research investigating this relationship.

For the diabetic subgroup, no statistically significant findings were found between the number of symptoms of physical illness and PHQ scores. However, individuals who reported 1-2 symptoms of physical illness showed a tendency to be more likely to have no depression based on the PHQ inventory than individuals who reported 5+ symptoms of physical illness (see Table 5-1). Although this particular research question did not prove statistically significant for the diabetic subgroup, this tendency is included based on its possible clinical implications and its potential contribution to the knowledge about physical symptoms of diabetes and depression. Based on the close approximation to statistical significance of this relationship, it is suggested that future research investigate this relationship with more proportionately representative and larger samples of diabetic participants.

**Table 5-1. Multinomial Logistic Regression examining the relationship between the “PHQ” and the number of symptoms of physical illness**

Effect	<u>Model fitting criteria</u>	<u>Likelihood ratio tests</u>		
	-2 log likelihood	Chi-square	df	Sig.
<b>Final Model</b>				
Intercept	10.122 <sup>a</sup>	.000	0	
# of physical symptoms	13.636	3.514	4	.173
<b>Parameter Estimates</b>				
	<u>B</u>	<u>Std. Error</u>	<u>Exp(B)</u>	<u>Sig.</u>
<b><u>NO DEPRESSION vs. SEVERE DEPRESSION</u></b>				
<b><i># of physical symptoms</i></b>				
1-2 symptoms	1.421	.760	4.143	.061

*Note: the dependent variable is “PHQ” reference category is “Depression”; Reference category for number of physical symptoms is “5+ symptoms”*

*<sup>a</sup>The intercept is equivalent to the final model.*

*\*p• .05,\*\* p• .01, \*\*\*p• .001*

### **Implications for Practice**

Based on this study’s finding with regard to the relationship between the number of symptoms of physical illness and depression scores as well as the findings of previous literature with regard to this relationship, it appears that as physical disease progresses the need arises for closer and more consistent management of the condition based on secondary complications. As this need arises, so does the need to better assess and appropriately treat depression among these groups. Depression in patients with diabetes has been associated with failure to refill medications and decreased adherence to exercise recommendations (Ciechanowski, Katon, Russo, 2000). Ammassari et al (2004) found that depressed HIV-infected individuals were more likely than non-depressed HIV-Infected individuals to be non-adherent to their HIV medications.

Depression has also been associated with accelerated disease progression and increased likelihood of death among HIV-Infected individuals (Ickovics, et al., 2001). Non-adherence to HIV medications may very well be the underlying mechanism for poor disease progression among depressed seropositive persons but the studies investigating this phenomenon have been cross-sectional and did not allow these inferences to be explored. In fact, failure to manage HIV or Diabetes can result in many other organ and secondary complications that are likely to increase morbidity and the risk of mortality.

These findings, consistent with other findings, highlight yet again the need to appropriately assess, diagnose, treat, and monitor symptoms of depression among chronically ill patients. Throughout this study, time constraints, competing demands, and lack of adequate training have been discussed with regard to the barriers that primary care present in adequately diagnosing, treating, and monitoring depression or any mental illness. Yet, the literature clearly demonstrates that the absence of proper screening, diagnosis, treatment, and follow-up of depression, produces ill-fated outcomes for individuals with chronic illnesses. Taken together, a logical deduction almost demands policy that requires the integration of behavioral health providers in primary care settings and specialty health settings treating chronically ill individuals. Social workers possess a unique skill set that could easily be integrated into various health settings to work with chronically ill patients. Clinical social workers receive training in assessment and diagnoses of mental illness. They are also trained in case management and resource management. This would aid social workers in collaborating with other health and allied professionals that the patient may have on their treatment team and also assist the patient in obtaining needed equipment or assistance for better maintenance of their illness. Medical social workers also have knowledge of medications and their associated adverse effects. This

would allow them to speak with patients about their medications and consult with patients' physicians about their concerns or reported symptoms. Finally, social workers also seem better suited in this capacity due to the shortage of psychologists and psychiatrists in many areas, particularly those that regularly service Latinos and African Americans.

#### **DISCUSSION OF RESEARCH QUESTION 6:**

**Among individuals with the same illness type, which pattern of causal beliefs for the symptoms of depression best predicts treatment preferences for depression?**

This research question was derived directly from the theoretical model which indicates that causal beliefs have a direct relationship with treatment preferences. In order to answer this research question, the responses rendered by the participants on the 27 causal beliefs were entered into a factor component analysis separately by illness type in order to establish causal belief patterns within the subgroups. Once the factors (causal belief patterns) were established then they were entered into a multinomial logistic regression model to evaluate the potential to predict treatment preferences for mode and provider.

The HIV subgroup response patterns on the 27 causal beliefs produced three factors for the causal beliefs of symptoms of depression; (1) Stress Factors, (2) External Factors, (2) Medical Factors. None of the factors produced a statistically significant relationship with treatment preferences and only the stress factor had a statistically significant relationship with provider preferences. This relationship pattern indicated that individuals with moderate levels of stress were more likely to prefer a provider combination over a psychologist/psychiatrist for the treatment of depression than individuals with high levels of stress.

Among the diabetic subgroup the pattern of responses on the causal belief inventory also produced three factors: (1) Interpersonal/personal factors, (2) External factors, and (3) Age

limiting factors. However, none of these factors predicted treatment or provider preferences. It is recommended that future research investigate this relationship with larger sample sizes to see if these factors remain consistent in order to test if the factors can predict treatment and provider preferences among this group. If the factors change, then the size of this study's sample of diabetics may have caused an inaccurate loading of items and created factors that may not accurately reflect those causal beliefs found in the general diabetic community.

### **Implications for Practice**

This pattern of findings among the HIV subgroup seems to support the literature with regard to help seeking patterns and the preference for collaborative models of care over usual care models. First, the literature suggests that individuals seeking assistance in the primary medical setting for depression are more likely to have mild to moderate subclinical depressive episodes than those who seek assistance from specialty mental health providers (Gerber, Barrett, Barrett, Oxman, Manheimer, Smith, & Whiting, 1992). Secondly, primary care patients have been found to prefer collaborative care models over the usual models of care (Lin, et al., 2000). This current finding suggests that individuals with moderate stress would in fact prefer combined treatment for their symptoms of depression. In this study combined treatment included a doctor and one of three counseling choice providers: (1) psychologist/psychiatrist, (2) social worker, or (3) spiritual leader. This indicates that HIV positive individuals want their doctors involved in their treatment of depressive symptoms but also would like a collaborative counseling party.

### **DISCUSSION OF RESEARCH QUESTION 7:**

**Among individuals with the same chronic illness, are there differences in depression scores across ethnicity?**

This research question was derived from the literature which indicates mixed findings with regard to depression across ethnicity in the general population. Some research, indicates that depression scores remain fairly constant across ethnicity, while other research indicates that depression scores are higher among Whites than African Americans and that Latino scores vary based on the language interviewed (Blazer, Kessler, McGonagle, & Swartz, 1994; Kessler et al., 2003; Coelho, Strauss, & Jenkins, 1998; Cohen, Magai, Yaffee, & Walcott-Brown, 2005; Marin, Gamba, Marin, 1992; Riolo, Nguyen, Greden, & King, 2005; Somervell, Leaf, Weissman, Blazer, & Bruce, 1989). Still other research, state that current depression inventories and those who administer them, are not sensitive to culturally relevant expressions of depression and thus underestimate depression in certain populations (Adebimpe et al., 1982; Abreu, 1999; Snowden, 2003; Whaley, 1997). The output for this analysis could not be interpreted for the diabetic subgroup due to singularities in the Hessian matrix. Future research is suggested with larger samples in order to evaluate the relationship between depression scores and ethnicity among individuals with diabetes.

However, among the HIV subsample, African Americans were 13.884 times and Latinos were 7.215 times more likely than Whites to exhibit no depression based on the PHQ inventory. This finding seems to moderately support the literature which indicates that Whites have higher depression scores than African Americans. However, some scholars suggest that such findings may be due to a lack of cultural equivalence, measurement equivalence, and/or conceptual equivalence in depression inventories that are based on DSM guidelines that were normed primarily from the expressions of depression of White males (Neighbors et al., 2003; Sue, 1988; Williams, 1986). Since, the PHQ-9, like other depression scales, does measure symptoms of depression based on DSM guidelines for depression, the findings of this study does not



invalidate the literature which suggests that depression inventories may not be detecting culturally relevant expressions of depression and may miss cases of depression in groups who do not express depression in a Westernized defined way. Taken together, the current findings indicate that individuals who score low on depression inventories are more likely to seek assistance for the symptoms measured by the depression inventory from a primary care physician. In the case of this study, African American and Latino seropositive individuals would be more likely to seek assistance for the symptoms measured by the PHQ-9 from their primary care physician. Where these findings do offer us insight into help seeking patterns, they do not confirm that we have accurately measured depression in all of the groups, particularly African Americans and Latinos.

#### **DISCUSSION OF RESEARCH QUESTION 8:**

##### **Are there differences in treatment preferences for depression care across illness type?**

This research question was derived from the theorized model of the relationships between the variables. In addition, as the pattern of findings from this study unfolded the need to evaluate this question became more evident. The findings from this research question reveal that diabetics were 3.6 times more likely than HIV seropositive individuals to prefer treatment provided by a doctor rather than a psychologist or psychiatrist. In addition, diabetics were 7.851 times more likely than HIV+ persons to show a preference for a spiritual leader to provide treatment for symptoms of depression over a psychologist or psychiatrist. No statistically significant relationship was found between treatment preferences and illness type.

This finding with regard to provider preference for the treatment of symptoms of depression across illness type indicates the importance of considering illness when providers

may be deciding whether to refer or to treat symptoms of depression. If the patient is presenting in the primary medical setting with symptom of depression, the physician may feel as if he/she does not have adequate training to properly treat the patient and may consider referring the patient to a specialty health provider. However, in regard to diabetic patients of this study, a referral to receive treatment from a provider other than another medical doctor may result in these individuals refusing treatment or not following up on the referral. However, if physicians are inadequately trained to recognize and treat depression or if they lack the confidence in their ability to treat the condition then patient outcomes may be affected. Even if physicians do feel that they may be able to adequately diagnose and treat symptoms of depression, other barriers that have been mentioned earlier (time constraints and competing demands) may still impede in their ability to recognize and adequately treat depression in the primary care setting. Collaborative models seem to be the best solution in these cases. Patients can feel as though their doctor is providing the treatment or leading the treatment team, and physicians will be able to overcome the barriers that may have hindered them from adequately treating the patient.

## **RECOMMENDATIONS**

The purpose of this study was to investigate the causal beliefs of symptoms of depression among the chronically ill. This study also sought to better understand the treatment preferences for symptoms of depression among this group and if causal beliefs or race/ethnicity impacted treatment preferences. In addition, it also tested if symptoms of physical illness impacted causal beliefs concerning the symptoms of depression and depression scores. Finally, this study evaluated if there were differences across illness type with regard to treatment and provider preferences for the treatment of depression among the chronically ill. Among the HIV seropositive group, there were statistically significant differences between the racial/ethnic groups with regard to causal beliefs, treatment preferences, and the role that the number of physical symptoms or complications played in depression scores. Among the diabetic subgroup, statistically significant differences were found between the racial/ethnic groups with regard to causal beliefs, treatment preferences, and the probable role that the number of physical symptoms or complications may play in individual causal beliefs and depression scores. This study and the supporting literature shed light on the role that patient' beliefs play in treatment preferences, treatment adherence, and overall health outcomes.

### **POLICY AND PRACTICE**

Current policy shifts in Managed Care and Federal Qualified Health Centers (FQHC), require that physicians treat individuals with mental disturbances in the primary medical setting (NASMHPD, 2005). Yet, these policy shifts have not taken into consideration the current psychological assessment training of physicians to be able to provide such services adequately as well as the time constraints and competing demands in the primary care setting that often preclude physicians from adequately diagnosing and treating individuals with psychological

distress. In addition, this shift has come without the proper research needed to better understand which models of care are best suited for the treatment of mental illness in the primary medical setting. Some research has indicated that collaborative care models may be best suited for these purposes (Katon et al., 1999). Thus it would seem appropriate to call for a vigilant emphasis on collaborative and integrative partnerships between physicians, behavioral health professionals, and possibly even spiritual leaders. However, this collaboration should recognize and respect the role that the patient's beliefs and preferences play in treatment and outcomes. To this end, policy for the integration of mental health in public health clinics from both the state and national level could be implemented to encourage collaboration for better outcomes for patients. This policy could incorporate funds or financial incentives to states and public health clinics which developed plans for integrating mental health into public health arenas. In addition, it would be beneficial for funding sources to require evaluation of the effectiveness of these programs using evidence based and culturally sensitive assessment tools.

As advances in health care develop, so should programs and policies that govern this arena. This should include the recognition of cultural differences in the presentation of mental illness, the preferences for treatment for mental illness, and the role that socioeconomic plays in access to information and treatment for mental illness (Surgeon General, 1999). Programs and policy should be moving in a direction which provides culturally relevant assessments and effective treatments to diverse populations.

## **RESEARCH**

Based on the above policy and practice recommendations, the research arena also has a responsibility in developing and researching models of care that are best suited for chronically ill populations with comorbid mental illnesses. Research first needs to incorporate individuals from

underrepresented populations such as African Americans, Latinos, immigrants, and other historically under-studied groups. In particular, these populations need to be studied with regard to their expressions of depression as well as other mental conditions. Furthermore, culturally relevant instruments need to be developed that accurately measure depression and other mental illnesses in populations of color. Based on the literature review, depression may be expressed, understood, and described substantively different across ethnic groups. A better job needs to be done in accurately measuring depression within each ethnicity. Of particular interest would be studies that capture populations of colors descriptions, expressions, and understanding of depressive symptoms.

Further research is also need among subgroups in the general population that may be out of current care in order to accurately ascertain the prevalence of comorbid mental illness and chronic physical illness. The purpose of clinical social work research should be to advance knowledge and improve outcomes for vulnerable populations. We cannot improve outcomes for these groups if they are not included in our research samples. In addition, based on the available literature and empirical studies that incorporate minority populations, less than 3% were produced by researchers of color. This deficiency in researchers of color in the area of health disparities may also play a role in the lack of research that incorporates populations of color and culturally relevant assessments.

Based on the findings of this study, future areas of study may include:

1. Further testing of the nonsignificant research questions among the diabetic subgroup with larger and representatively proportionate samples.
2. Incorporate illness type in the analyses as a covariate.

3. Investigate the relationship between causal beliefs and depression scores only between individuals who actually have scores that indicate either mild, moderate, or severe depression.
4. Compare Spanish speaking responses to English speaking Latinos to examine if within group differences exist across the research questions.
5. For modal preference make medication the reference category to compare findings with other studies.
6. Further testing of this study's model related to causal beliefs of symptoms of depression across all racial/ethnic groups
  - a. A test of the full model including "past treatment experiences" and "motivation" as they relate to causal beliefs and treatment preferences for symptoms of depression
  - b. Testing the role disease severity and chronicity play on causal beliefs and treatment preferences for symptoms of depression.
7. Investigating the model across other chronic illness types.
8. For more clarity with regard to the role that religion, spirituality and faith plays in causal beliefs and treatment preferences, a qualitative method might be added to future research designs.
9. Further testing of this study's model should also test the role of treatment preferences in patient's intentions and adherence behavior.

**Do You Have Diabetes?**



**Receive \$10.00 Dollars**

**For your Participation in a Confidential Survey Investigating Symptoms  
of Diabetes and Mood**

**CONFIDENTIALLY**

- Report your symptoms and how they impact you
- Tell which treatments you would prefer for your symptoms

**\*This is an independent project approved and supervised by The University of Texas at Austin and is not associated with services provided by (Name of Clinic).**

**Survey Completion Sessions at (Name of Clinic) on:**

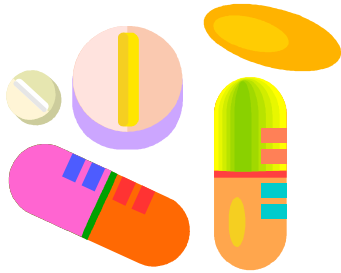
\_\_\_\_\_ at

\_\_\_\_\_AM/PM

You have been given this flyer because you are under current care with (Name of Clinic) for the treatment of Diabetes. If you are interested in taking part in this study on the day and times listed above, a sign up both will be available at the main reception desk of the clinic. If you are interested in taking part in this study but are not available to be interviewed on the days or times listed above, you may reach the Principle Investigator:

**La Tonya Noël, MSW, Ph.D. (c), at 512-232-6058.**

# Depression Care Treatment Preferences Among HIV seropositive Patients



Receive **\$5.00 Dollars**  
**FOR YOUR PARTICIPATION IN A CONFIDENTIAL SURVEY**

- This study seeks to explore how HIV seropositive patients understand their symptoms as they relate to mood and which treatments they would prefer.
- Participants will be interviewed one time for no more than 30 minutes

Survey completion sessions will be held at this agency on:

\_\_\_\_\_ at

\_\_\_\_\_ (AM/PM)

If you are interested in taking part in this study today, please contact (***Agency Contact Information***). If you are interested in taking part in this study but are not available to be interviewed on the dates or times listed above, you may reach the Principle Investigator:

**La Tonya Noël, MSW, Ph.D. Candidate, at 512-232-6058.**

This is an independent project approved and supervised by THE UNIVERSITY OF TEXAS AT AUSTIN and is not associated with services provided by (NAME OF CLINIC).



## **APPENDIX B. CONSENT FORM**

### **INFORMED CONSENT TO PARTICIPATE IN RESEARCH**

#### **The University of Texas at Austin**

You are being asked to participate in a research study. This form provides you with information about the study. The Principal Investigator (the person in charge of this research) or his/her representative will provide you with a copy of this form to keep for your reference, and will also describe this study to you and answer all of your questions. Please read the information below and ask questions about anything you don't understand before deciding whether or not to take part. Your participation is entirely voluntary and you can refuse to participate without penalty or loss of benefits to which you are otherwise entitled.

**Title of Research Study:** Depression Care Treatment Preferences among Chronically Ill Patients: The Impact of Causal Attributions

**Principal Investigator(s) (include faculty sponsor), UT affiliation, and Telephone Number(s):**

La Tonya Noel, MSW, Doctoral Candidate, School of Social Work (512) 232-6058 (Faculty Chair, Elizabeth Pomeroy, Ph.D. Professor, School of Social Work (512) 232-3405)

**Funding source:** Not Applicable

**What is the purpose of this study?** The goal of the project is to explore chronically ill patients' understanding of depression and to compare which treatments for depression are preferred by African Americans, Latinos, and Anglo-Americans.

**What will be done if you take part in this research study?** You will be asked to complete a confidential survey (attached) that should take no more than 30 minutes to complete with assistance.

**The Project Duration is:** Data will be collected from August 1 to December 31, 2006. However, you will only have to fill out the survey once that should not exceed 30 minutes in duration with assistance.

**What are the possible discomforts and risks?** Survey administration and response is associated with few risks. Confidentiality will be protected since respondent names will not be recorded on the survey instrument. Informed consent forms will be maintained separately and will not be linked to completed survey instruments. Informed consent forms will be kept in a locked file cabinet in the researcher's office at the School of Social Work at the University of Texas at Austin. Loss or compromise of services for you as a participant may be a theoretical risk; however, agency staff will not participate in assisting you and will be unaware of your responses thus your participation in this study should not pose a risk to loss of any services. In addition,

Completed surveys will only be handled by the researcher (La Tonya Noel) and agency personnel will not handle, retain, or transmit completed surveys. No information regarding child abuse or neglect will be solicited.

After data entry, all hardcopy surveys will remain in the possession of the researcher in a locked file cabinet. The survey seeks information about respondent demographic information (i.e. age, gender, education), use of services, health information, and treatment preferences. Some of the questions may involve sensitive information that may invoke minor discomfort for you when answering, however for the most part there should be no risks involved in this study. The researcher will let you know if your responses on the questionnaire indicate that you may suffer from certain conditions related to mood. This will allow you to share this information with your physician. If you and your physician decide that you should be treated for these conditions, then there may be risks associated with that treatment. Although psychological harm is unlikely, each agency has behavioral health providers available for you and has agreed to make those services available to you if you experience negative emotional responses or other psychological reactions based on your involvement in the study. If, you respond positively to question 9 of the PHQ-9 (Thoughts that you would be better off dead, or of hurting yourself in some way) you will be immediately referred to an onsite qualified counselor for assistance.

**What are the possible benefits to you or to others?** If you agree to take part in this study, there may or may not be direct physical, psychological, and /or medical benefit to you. We hope the information learned from this study will also benefit future patients with similar physical conditions as you.

**If you choose to take part in this study, will it cost you anything?** There is no charge to participate in this research study.

**Will you receive compensation for your participation in this study?** You will also be given a \$5.00 bill for recognition of your time filling out the questionnaire. Neither your participation nor your non-participation in this survey, or the answers you provide, will have any impact on the services you currently receive from People's Community Clinic or AIDS Services of Austin nor will it impact your relationship with the University of Texas at Austin.

**What if you are injured because of the study?** In the case of injury or illness resulting from the study, emergency medical treatment is available for you through David Powell/People's Community Clinic, but will be provided at the usual charge. NO funds have been set aside to compensate you in the event of injury. You or your insurance company will be charged for continuing medical care and/or hospitalization. This does not waive your rights in the event of negligence.

**If you do not want to take part in this study, what other options are available to you?** Your participation in this study is entirely voluntary. You are free to refuse to be in the study, and your refusal will not influence current or future relationships with The University of Texas at Austin, AIDS Services of Austin, or any agency from which you receive services. Your decision will not affect your right to receive any services you need or request.

In addition, instead of being in this study, you may speak directly with your physician about any symptoms or concerns you may have. Appointments with a physician will be provided at the usual charge.

**How can you withdraw from this research study and who should you call if you have questions?**

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time.

For your safety or the safety of others, the Principal Investigator may terminate your participation at any time without your consent.

**If you wish to stop your participation in this research study for any reason, you should contact the principal investigator: *La Tonya Noel, MSW* at (512) 232-6058 or her dissertation sponsor: *Elizabeth Pomeroy, Ph.D.* You should also call the principal investigator for any questions, concerns, or complaints about the research. You are free to withdraw your consent and stop participation in this research study at any time without penalty or loss of benefits for which you may be entitled. Throughout the study, the researchers will notify you of new information that may become available and that might affect your decision to remain in the study.**

**In addition, if you have questions about your rights as a research participant, or if you have complaints, concerns, or questions about the research, please contact Lisa Leiden, Ph.D., Chair, The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects, or the Office of Research Compliance and Support at (512) 471-8871.**

**How will your privacy and the confidentiality of your research records be protected?** Efforts will be made to keep your personal information and responses to the questionnaire confidential. The only individuals that will have access to your research information are the Principal Investigators, La Tonya Noel, MSW and her dissertation chair, Elizabeth Pomeroy, Ph.D.

Confidentiality will be maintained by assigning participants an identification number that will be used on the self-report questionnaire. The consent forms, questionnaires and identification key will be kept in a locked filing cabinet. They will be destroyed once the study is complete.

Information that is obtained in connection with this study will not be identified with you. It will be analyzed and reported along with information provided by all other survey participants. Your responses will not be linked to your name in any written or verbal report of this research project. No one, not even the researcher, will link your responses with your name.

**If in the unlikely event it becomes necessary for the Institutional Review Board to review your research records, then the University of Texas at Austin will protect the confidentiality of those records to the extent permitted by law. Your research records will**

**not be released without your consent unless required by law or a court order. The data resulting from your participation may be made available to other researchers in the future for research purposes not detailed within this consent form. In these cases, the data will contain no identifying information that could associate you with it, or with your participation in any study.**

**Will the researchers benefit from your participation in this study?** There are no potential benefits for the researcher with regard to your participation in this study

**Signatures:**

**As a representative of this study, I have explained the purpose, the procedures, the benefits, and the risks that are involved in this research study:**

---

**Signature and printed name of person obtaining consent** **Date**

**You have been informed about this study's purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time. You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights.**

---

**Printed Name of Subject** **Date**

---

**Signature of Subject** **Date**

---

**Signature of Principal Investigator** **Date**

## **APPENDIX C. QUESTIONNAIRE**

### **Patient Screening Questions**

(For potential women participants only; this question will be asked by researcher prior to administration of the instrument to potential women participants.)

1. Are you pregnant or is there any possibility that you may be pregnant?

***(Please check the box that corresponds with your answer)***

☐ Yes

***(Please stop here)***

☐ No

***(Continue on to the next questions)***

### **Diabetes Screener Questions**

2. Have you been told by a doctor or medical professional that you have *Diabetes*?

☐ Yes

***(Continue on to the next questions)***

☐ No

***(Please stop here)***

3. When were you diagnosed with diabetes (year): \_\_\_\_\_

4. Have you had hypertension, sometimes called high blood pressure, or have taken medication for it?

☐ Yes

☐ No

5. Have you had any Kidney problems (dialysis) or protein found in your urine?

☐ Yes

☐ No

6. What medications are you taking for your diabetes?

☐ No medications

☐ Pills Only

☐ Insulin Only

☐ Both pills and insulin

7. Have you had any diabetes related complications such as:

**a. Retinopathy (Blindness)**

☐ Yes

☐ No

**b. Amputations**

☐ Yes

☐ No

**d.** Pain, numbness, tingling or paralysis in your hands, fingers, feet or toes?  
(also known as neuropathy)

☐ Yes

☐ No

8. Over the last month, what has your average self-monitory glucose level been?

☐ Below 70

☐ 70 to 120

☐ 120 to 180

☐ Above 180

9. How compliant would you say that you are with your recommended medication and other physician suggested life changes?

☐ Very Compliant

☐ Compliant

☐ Somewhat Compliant

☐ Not at all Compliant

## **HIV Screener Questions** (Not for PCC)

1. Have you been diagnosed or treated by a member of the medical profession as having AIDS, immune system disorder, or tested positive for HIV? ***(Please check the box that corresponds to your answer)***

☐ Yes ***(Continue on to the next questions)***

☐ No ***(Please stop here)***

2. What year were you diagnosed with HIV?

---

3. Have you experienced any of the following symptoms related to your conditions:

**a.** Rash, itching, or other skin problems

☐ Yes

☐ No

**b.** Pain, numbness, tingling in hands/feet, or paralysis

☐ Yes

☐ No

**c.** Difficulty breathing

☐ Yes

☐ No

**d.** Pneumonia

☐ Yes

☐ No

**e.** Chest pain or tightness

☐ Yes

☐ No

**f.** Dry or painful mouth, trouble swallowing

☐ Yes

☐ No

**g.** Thrush

☐ Yes

☐ No



**h. Memory loss/dementia**

☐ Yes

☐ No

4. Have you been diagnosed with AIDS?

☐ Yes

☐ No

5. When were you diagnosed with AIDS? (year) \_\_\_\_\_

6. What is your viral load? (circle the range that best describes your current viral load)

☐ Undetectable

☐ Detectable but less than 1,000

☐ 1,000 to 5,000

☐ 5,001 to 10,000

☐ 10,001 to 50,000

☐ 50,001 to 100,000

☐ 100,001 to 500,000

☐ 500,001 to 1 million

☐ < 1 million

☐ Don't know my viral load

7. How compliant would you say that you are with your recommended medications and other physician suggested life changes?

☐ Very Compliant

☐ Compliant

☐ Somewhat Compliant

☐ Not at all Compliant

Please answer the following general questions in regard to you and where you receive most of your medical treatment. (indicate your answer with an “X” in the boxes or fill in the blank line),

1. Age: \_\_\_\_\_ years of age (please tell me your age)
2. Gender: ☐ female ☐ male
3. Current marital status: ☐ single ☐ married/partnered ☐ divorced  
☐ separated ☐ widowed
4. Education ☐ less than high school  
☐ high school graduate/GED  
☐ some college/technical training  
☐ college graduate  
☐ Post college or graduate degree
5. Employment Status ☐ full-time employed ☐ Part-time employed  
☐ Retired ☐ Unemployed  
☐ Disabled ☐ Housewife  
☐ Student but employed full-time  
☐ Student and employed part-time  
☐ Student and unemployed

6. Race/Ethnicity      ☐ Latino or Latin decent  
                                 ☐ European-American  
                                 ☐ African American or African descent
7. Income Level        ☐ 0-9,999  
                                 ☐ 10,000-19,999  
                                 ☐ 20,000-29,999  
                                 ☐ 30,000-39,999  
                                 ☐ 40,000-49,999  
                                 ☐ 50,000-59,999  
                                 ☐ 60,000-69,999  
                                 ☐ 70,000-79,999  
                                 ☐ 80,000-89,999  
                                 ☐ >90,000
8. Where would you say you receive most of your medical treatment services?  
                                 ☐ Private Doctor  
                                 ☐ A Nurse Practitioner  
                                 ☐ Public Clinics (no assigned doctor)  
                                 ☐ Emergency Room  
                                 ☐ Other (please specify):  
                                 \_\_\_\_\_

## PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

**SURVEY**

**NUMBER:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

Over the last 2 weeks, how often have you been bothered by any of the following problems?  
(circle your answer)

	Not at all	Several Days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself - or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual.	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself in some way.	0	1	2	3

add columns

**TOTAL:**

<b>10.</b> If you checked off any problems, how difficult have these problems made it for you to do normal activities, such as; work, take care of things at home, or get along with others? (indicate you answer with a "X")	<b>Not at all difficult</b>	_____
	<b>Somewhat difficult</b>	_____
	<b>Very Difficulty</b>	_____
	<b>Extremely Difficult</b>	_____

PHQ-9 is adapted from the PRIME MD TODAY, developed by Drs Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke, and colleagues, with an educational grant from Pfizer Inc. For research information, contact Dr. Spitzer at [rls8@columbia.edu](mailto:rls8@columbia.edu). Use of the PHQ-9 may only be made in accordance with the Terms of Use available at <http://www.pfizer.com>. Copyright © 1999 Pfizer Inc. All rights reserved. PRIME MD TODAY is a trademark of Pfizer Inc.

**In this next section I would like to ask you questions related to treatments you may be receiving or received in the past. Please check the box that corresponds with your answer unless otherwise indicated.**

11. Are you currently receiving treatment for depression?

☐ Yes

☐ No

11a. If yes, what treatment are you receiving?

☐ Medication prescribed by a Doctor or Physician

☐ Medication prescribed by a Nurse Practitioner

☐ Medication prescribed by a Psychiatrist

☐ Counseling by a Doctor or Physician

☐ Counseling by a Nurse Practitioner

☐ Counseling by a Psychiatrist

☐ Counseling by a social worker

☐ Counseling by a Minister, Pastor, or Spiritual Leader

☐ Both Medication and Counseling with a Doctor

☐ Both Medication and Counseling Psychiatrist

☐ Both Medication and Counseling Nurse Practitioner

☐ Both Medication and Counseling but with different providers

☐ Other (Please specify):\_\_\_\_\_

12. Have you received treatment for depression in the past?

☐ Yes

☐ No

12a. If yes, what type of treatment did you receive?

☐ Medication prescribed by a Doctor or Physician

☐ Medication prescribed by a Nurse Practitioner

☐ Medication prescribed by a Psychiatrist

☐ Counseling by a Doctor or Physician

☐ Counseling by a Nurse Practitioner

☐ Counseling by a Psychiatrist

☐ Counseling by a social worker

☐ Counseling by a Minister, Pastor, or Spiritual Leader

☐ Both Medication and Counseling with a Doctor

☐ Both Medication and Counseling Psychiatrist

☐ Both Medication and Counseling Nurse Practitioner

☐ Both Medication and Counseling but with different providers

☐ Other (Please specify):\_\_\_\_\_

13. Are you aware of all the treatments that are available for symptoms of depression?

(1) Yes

(5) No

13a. If yes, please list those that you are aware of: (the spaces provided do not indicate the amount available. If you need more space please use the back of this page to list)

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

☐ Yes

☐ No

[illegible]

**Now I would like to ask you questions related to your treatment preferences**

15. Off the top of your head, if you were depressed and you had your choice of treatment and provider which **ONE** of each would you prefer?

Treatment Option

Provider Option

☐ **Medication**

☐ Doctor

☐ Nurse Practitioner

☐ Psychiatrist

---

☐ **Counseling**

☐ Doctor

☐ Nurse Practitioner

☐ Minister

☐ Psychiatrist

☐ Psychologist

☐ Social Worker

---

☐ **Medication and Counseling**

☐ Doctor

☐ Nurse Practitioner

☐ Psychiatrist

☐ Provider Combination

**(Check the provider combination you would prefer)**

Medication Provider

Counseling Provider

☐ Doctor

☐ Doctor

☐ Nurse Practitioner

☐ Nurse Practitioner

☐ Psychiatrist

☐ Psychiatrist

☐ Social Worker

☐ Psychologist

☐ Minister, Pastor, or  
Spiritual leader

---

☐ **Other** (Please specify): \_\_\_\_\_

☐ **No treatment** (Please skip to IPQ-R questions. Do not answer questions 16-18)



16. Would your treatment preference change if it were more expensive than other treatments?  
☐ Yes  
☐ No
17. Would your treatment preference change if it had more side effects than the other treatment options?  
☐ Yes  
☐ No
18. Would your treatment preference change if it were less effective or less likely to improve your symptoms than the other treatments?  
☐ Yes  
☐ No

## ILLNESS PERCEPTION QUESTIONNAIRE (IPQ-R)

**SURVEY NUMBER:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

### YOUR VIEWS ABOUT YOUR ILLNESS

Listed below are a number of symptoms that you may or may not have experienced since your illness. Please indicate by circling **Yes** or **No**, whether you have experienced any of these symptoms since your illness, and whether you believe that these symptoms are related to your illness.

	I have experienced this symptom <u><b>since my illness</b></u>		This symptom is <u><b>related to my illness</b></u>	
	Yes	No	Yes	No
1. Nausea, gas, or indigestion	Yes	No	Yes	No
2. Little interest or pleasure in doing things*	Yes	No	Yes	No
3. Feeling sad, blue, or down in the dumps*	Yes	No	Yes	No
4. Feeling tired	Yes	No	Yes	No
5. Trouble sleeping or sleeping too much	Yes	No	Yes	No
6. Feeling slowed down or restless and unable to sit still	Yes	No	Yes	No
7. Headaches	Yes	No	Yes	No
8. Irritable	Yes	No	Yes	No
9. Aches and pains	Yes	No	Yes	No
10. Sexual Problems	Yes	No	Yes	No
11. Feeling Hopeless*	Yes	No	Yes	No
12. Feeling Anxious	Yes	No	Yes	No
13. Feeling worthless or guilty*	Yes	No	Yes	No
14. Trouble Concentrating, thinking, remembering or making decisions*	Yes	No	Yes	No
15. Thoughts of death or suicide*	Yes	No	Yes	No
16. Change in appetite or weight	Yes	No	Yes	No
17. Stomach pains	Yes	No	Yes	No
18. Chest pains	Yes	No	Yes	No

	I have experienced this symptom <b><u>since my illness</u></b>	
19. Dizziness	Yes	No
20. Fainting	Yes	No
21. Feeling you heart race or pound	Yes	No
22. Shortness of breath	Yes	No
23. Constipation, loose bowels or diarrhea	Yes	No

This symptom is <b><u>related to my illness</u></b>	
Yes	No
Yes	No
Yes	No
Yes	No
Yes	No

*INTERVIEWER: Pull out Symptom Lists (2), highlight symptoms endorsed, and give one to participant*

**STOP: Has patient endorsed any depressive symptoms (# 2, 3, 4, 5, 6, 8, 11, 13, 14, 15, 16)?**

**PLEASE CIRCLE ONE**

YES  
↓  
Go to  
**IPQ (D) – 3**  
(White Form)

NO  
↓  
Go to  
**IPQ (no D) - 3**  
(Purple Form)

You've indicated that either in the past or currently you have been bothered with feeling down or depressed, and/or having little to no interest or pleasure in doing things. You have also expressed some other symptoms that sometimes go along with depression (**refer to questions 2-6, 8, 11, 13-16 on page 5**). We are doing a study to find out how people view their symptoms, what they think causes their symptoms, and how they usually manage these symptoms. Here are a number of questions about this, for each set of questions, there are different response categories. For the next set of questions, the response categories are ***strongly agree, agree, neither agree or disagree, disagree, strongly disagree***.

**CAUSE:** Now, thinking about the symptoms on the previous page (refer to questions 2-6, 8, 10-11, 13-16). I'd like to know what you think caused these symptoms. Please tell me how much you agree or disagree with the following statements about your symptoms.

	<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree or disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
1. A germ or virus caused my symptoms	1	2	3	4	5
2. Diet played a major role in causing my symptoms	1	2	3	4	5
3. The death of a loved one caused my symptoms*	1	2	3	4	5
4. Pollution of the environment caused my symptoms	1	2	3	4	5
5. My symptoms are hereditary-they run in my family	1	2	3	4	5
6. My symptoms are due to a medical illness*	1	2	3	4	5
7. I have these symptoms because I don't take care of myself physical	1	2	3	4	5
8. It was just by chance I developed these symptoms	1	2	3	4	5
7. My symptoms are a punishment from God	1	2	3	4	5
10. Stress was a major factor in causing my symptoms*	1	2	3	4	5
11. Marriage or relationship problems led to my symptoms*	1	2	3	4	5
12. My symptoms are mostly due to my own behavior	1	2	3	4	5
13. Other people played a large role in causing my symptoms	1	2	3	4	5
14. My symptoms were caused by poor medical care in the past	1	2	3	4	5
15. My symptoms are a reaction to a medical illness*	1	2	3	4	5
16. My state of mind played a major part in causing my symptoms*	1	2	3	4	5

<b>CAUSE:</b>	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree
17. My lack of spiritual faith caused my symptoms	1	2	3	4	5
18. The loss of a significant relationship caused my symptoms*	1	2	3	4	5
19. My negative thinking caused my symptoms*	1	2	3	4	5
20. Family problems or worries caused my symptoms*	1	2	3	4	5
21. My personality caused my symptoms.	1	2	3	4	5
22. My emotional state (e.g. feeling down, lonely, anxious, empty) caused my symptoms*	1	2	3	4	5
23. Being overworked played a major role in causing my symptoms	1	2	3	4	5
24. My symptoms are due to me getting older	1	2	3	4	5
25. my symptoms are due to smoking	1	2	3	4	5
26. My altered immunity caused my symptoms	1	2	3	4	5
27. It was an accident or injury that caused my symptoms	1	2	3	4	5

**CONSEQUENCES:** Now, I would like you to think about the effect these symptoms (**refer to questions 2-6, 8, 10-11, 13-16 on page 5**) have had on your life.

	<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree or disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
1. My symptoms are part of a serious condition	1	2	3	4	5
2. My symptoms have had major consequences on my life	1	2	3	4	5
3. My symptoms have become easier to live with	1	2	3	4	5
4. My symptoms have not had much effect on my life	1	2	3	4	5
5. My symptoms have strongly affected the way others see me	1	2	3	4	5
6. My symptoms have serious financial consequences	1	2	3	4	5
7. My symptoms have affected the way I see myself as a person	1	2	3	4	5
8. My symptoms are difficult for persons who are close to me to deal with	1	2	3	4	5

**TIMELINE:** Now, I'd like to know how long you think these symptoms (**refer to questions 2-6, 8, 10-11, 13-16 on page 5**) will last. Please indicate how much you agree or disagree by circling the following statement that best describes how long you think your symptoms will last.

	<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree or disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
1. My symptoms will last a short time	1	2	3	4	5
2. My symptoms are likely to be permanent rather than temporary	1	2	3	4	5
3. My symptoms will come and go	1	2	3	4	5
4. My symptoms will last a long time	1	2	3	4	5
5. My symptoms will pass quickly*	1	2	3	4	5
6. I expect to have these symptoms for the rest of my life*	1	2	3	4	5
7. These symptoms change a great deal from day to day*	1	2	3	4	5
8. My symptoms are very unpredictable*	1	2	3	4	5
9. I go through cycles in which my symptoms get better and worse*	1	2	3	4	5



**CONTROL/CURE:** Now, I'd like to know if you think your symptoms (refer to questions 2-6, 8, 10-11, 13-16 on page 5) can be controlled. Please indicate how much you agree or disagree by circling the following statement that best describes your belief about your symptoms.

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree
1. My symptoms will improve in time	1	2	3	4	5
2. There is a lot that I can do to control my symptoms	1	2	3	4	5
3. There is very little that can be done to improve my symptoms	1	2	3	4	5
4. There is medicine that can improve my symptoms	1	2	3	4	5
5. Recovery from my symptoms depends on chance or fate	1	2	3	4	5
6. Recovery from my symptoms depends on my faith in God	1	2	3	4	5
7. What I do or don't do can determine whether my symptoms get better or worse	1	2	3	4	5
8. The course of my symptoms depends on me*	1	2	3	4	5
9. Nothing I do will affect my symptoms*	1	2	3	4	5
10. I have the power to influence my symptoms*	1	2	3	4	5
11. My actions will have no affect on the improving or worsening my symptoms	1	2	3	4	5
12. The negative effects of my symptoms can be improved with counseling	1	2	3	4	5
13. There is nothing which can help my symptoms	1	2	3	4	5

**APPENDIX D. RESEARCH QUESTION ONE: COMPLETE TABLES STEP 1 FOR LOGISTIC REGRESSION ANALYSES.**

<b>In Text Table</b>	<b>Corresponding Table in Appendix D</b>
<b>Table 4.11</b>	<b>D.1 (HIV)</b>
<b>Table 4.12</b>	<b>D.2 (HIV)</b>
<b>Table 4.13</b>	<b>D.3 (HIV)</b>
<b>Table 4.14</b>	<b>D.4 (HIV)</b>
<b>Table 4.15</b>	<b>D.5 (HIV)</b>
<b>Table 4.16</b>	<b>D.6 (HIV)</b>
<b>Table 4.17</b>	<b>D.7 (HIV)</b>
<b>Table 4.18</b>	<b>D.8 (HIV)</b>
<b>Table 4.19</b>	<b>D.9 (HIV)</b>
<b>Table 4.20</b>	<b>D.10 (HIV)</b>
<b>Table 4.21</b>	<b>D.11 (HIV)</b>
<b>Table 4.23</b>	<b>D.12 (Diabetes)</b>
<b>Table 4.24</b>	<b>D.13 (Diabetes)</b>
<b>Table 4.25</b>	<b>D.14 (Diabetes)</b>

<b>In Text Table</b>	<b>Corresponding Table in Appendix D</b>
<b>Table 4.26</b>	<b>D.15 (Diabetes)</b>
<b>Table 4.27</b>	<b>D.16 (Diabetes)</b>
<b>Table 4.28</b>	<b>D.17 (Diabetes)</b>
<b>Table 4.29</b>	<b>D.18 (Diabetes)</b>
<b>Table 4.30</b>	<b>D.19 (Diabetes)</b>
<b>Table 4.31</b>	<b>D.20 (Diabetes)</b>
<b>Table 4.32</b>	<b>D.21 (Diabetes)</b>
<b>Table 4.33</b>	<b>D.22 (Diabetes)</b>
<b>Table 4.34</b>	<b>D.23 (Diabetes)</b>
<b>Table 4.35</b>	<b>D.24 (Diabetes)</b>
<b>Table 4.36</b>	<b>D.25 (Diabetes)</b>
<b>Table 4.37</b>	<b>D.26 (Diabetes)</b>
<b>Table 4.38</b>	<b>D.27 (Diabetes)</b>

**D.1. Predicting Causal Belief that “a germ or virus caused symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	.487	.765	.382	1.628
Income	-.409	.208	.648	.664
Age	.396	.434	.510	1.485
Education	.161	.077	.782	1.174
PHQ		<b>8.254</b>	<b>.016</b>	
No depression	-1.592	5.278	.022	.203
Mild depression	-.068	.013	.910	.934
Race/Ethnicity		<b>7.601</b>	<b>.022</b>	
African Americans	.202	.115	.734	1.233
Latinos	1.774	5.846	.016	5.892

**D.2. Predicting Causal Belief that “the death of a loved one caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	.328	.362	.547	1.389
Income	-.621	.208	.597	.537
Age	.123	.044	.834	1.131
Education	-.523	.918	.338	.592
PHQ		<b>1.369</b>	<b>.504</b>	
No depression	-.737	1.078	.299	.479
Mild depression	-.069	.016	.900	.933
Race/Ethnicity		<b>3.617</b>	<b>.088</b>	
African Americans	-1.005	2.896	.078	.366
Latinos	-1.073	2.821	.093	.537

**D.3. Predicting Causal Belief that “my symptoms of depression are hereditary” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

<b>Predictor</b>	<b>B</b>	<b>Wald (<math>X^2</math>)</b>	<b><i>p</i></b>	<b>Odds Ratio</b>
Gender	-.018	.001	.977	.982
Income	-.023	.000	.984	.977
Age	-.092	.019	.890	.912
Education	-.079	.015	.904	.924
PHQ		<b>5.028</b>	<b>.081</b>	
No depression	-1.341	3.213	.073	.261
Mild depression	-1.223	4.189	.041	.294
Race/Ethnicity		<b>5.649</b>	<b>.059</b>	
African Americans	-.898	2.170	.141	.407
Latinos	-1.711	5.506	.019	.181

**D.4. Predicting Causal Belief that “my symptoms of depression are due to a medical illness” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.138	.069	.793	.871
Income	.156	.028	.866	1.169
Age	-1.099	3.699	.054	.333
Education	.806	2.119	.145	2.239
PHQ		<b>6.090</b>	<b>.048</b>	
No depression	-1.900	6.088	.014	.150
Mild depression	-1.260	3.418	.064	.284
Race/Ethnicity		<b>.181</b>	<b>.914</b>	
African Americans	.273	.174	.677	1.314
Latinos	.155	.049	.824	1.167

**D.5. Predicting Causal Belief that “stress was a major factor in causing my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.021	.002	.968	.980
Income	.163	.031	.861	1.178
Age	-.299	.272	.602	.741
Education	-.053	.010	.920	.948
PHQ		<b>4.144</b>	<b>.126</b>	
No depression	-1.260	3.766	.052	.284
Mild depression	-.398	.521	.471	.672
Race/Ethnicity		<b>5.152</b>	<b>.076</b>	
African Americans	-1.325	4.060	.044	.266
Latinos	-1.514	4.783	.029	.220

**D.6. Predicting Causal Belief that “my symptoms of depression were caused by poor medical care in the past” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	.636	1.085	.298	1.889
Income	-.297	.059	.808	.743
Age	-.567	.641	.424	.567
Education	-1.456	6.103	.013	.233
PHQ		<b>2.124</b>	<b>.346</b>	
No depression	-1.067	1.578	.209	.344
Mild depression	-.014	.001	.982	.986
Race/Ethnicity		<b>4.324</b>	<b>.110</b>	
African Americans	-1.294	3.827	.050	.274
Latinos	-1.197	2.842	.092	.302



**D.7. Predicting Causal Belief that “my symptoms of depression are a reaction to my medical illness” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	.859	2.653	.103	2.360
Income	.276	.095	.758	1.317
Age	.357	.375	.540	1.429
Education	.386	.499	.480	1.471
PHQ		<b>6.099</b>	<b>.047</b>	
No depression	-1.640	6.001	.014	.194
Mild depression	-1.016	3.247	.072	.362
Race/Ethnicity		<b>3.198</b>	<b>.103</b>	
African Americans	-1.118	3.129	.077	.327
Latinos	-.693	1.094	.077	.500

**D.8. Predicting Causal Belief that “the loss of a significant relationship caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

<b>Predictor</b>	<b>B</b>	<b>Wald (<math>X^2</math>)</b>	<b><i>p</i></b>	<b>Odds Ratio</b>
Gender	-.282	.222	.637	.754
Income	.719	.523	.470	2.052
Age	-.204	.108	.742	.816
Education	.322	.291	.590	1.380
PHQ		<b>5.530</b>	<b>.063</b>	
No depression	-1.876	5.525	.019	.153
Mild depression	-.579	1.155	.282	.561
Race/Ethnicity		<b>.477</b>	<b>.788</b>	
African Americans	.128	.044	.833	1.137
Latinos	-.260	.160	.689	.771

**D.9. Predicting Causal Belief that “my negative thinking caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	.062	.014	.907	1.064
Income	-.841	.521	.470	.431
Age	-.114	.039	.843	.892
Education	.216	.155	.694	1.242
PHQ		<b>3.914</b>	<b>.141</b>	
No depression	-1.337	3.839	.050	.263
Mild depression	-.419	.652	.419	.657
Race/Ethnicity		<b>1.451</b>	<b>.484</b>	
African Americans	-.691	1.444	.229	.501
Latinos	-.485	.637	.425	.615

**D.10. Predicting Causal Belief that “my emotional state caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	.073	.020	.889	1.076
Income	-.216	.050	.824	.806
Age	.253	.205	.651	1.288
Education	.114	.047	.828	1.121
PHQ		<b>5.349</b>	<b>.069</b>	
No depression	-1.091	2.705	.100	.335
Mild depression	.211	.164	.686	1.235
Race/Ethnicity		<b>1.805</b>	<b>.406</b>	
African Americans	-.776	1.771	.183	.460
Latinos	-.616	.999	.318	.540

**D.11. Predicting Causal Belief that “my altered immunity caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (HIV Subgroup N=106)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.524	1.005	.316	.592
Income	-.515	.269	.604	.597
Age	-.431	.572	.450	.650
Education	-.191	.127	.722	.826
PHQ		<b>5.675</b>	<b>.059</b>	
No depression	-1.502	5.243	.022	.223
Mild depression	-.460	.711	.399	.632
Race/Ethnicity		<b>2.317</b>	<b>.314</b>	
African Americans	-.871	2.045	.153	.419
Latinos	-.880	1.829	.176	.415

**D.12. Predicting Causal Belief that “a germ or virus caused symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-1.795	6.693	.010	.166
Income	.262	.127	.721	1.300
Age	.509	.587	.443	1.664
Education	-1.011	1.695	.193	.364
PHQ		<b>1.585</b>	<b>.453</b>	
No depression	-1.201	1.461	.227	.318
Mild depression	-.115	.025	.875	.935
Race/Ethnicity		<b>5.718</b>	<b>.057</b>	
African Americans	-.137	.027	.871	.844
Latinos	-2.007	4.398	.036	.130

**D.13. Predicting Causal Belief that “the death of a loved one caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.119	.035	.851	.888
Income	.616	.835	.361	1.852
Age	.762	1.506	.220	2.143
Education	.001	.000	.998	1.001
PHQ		<b>5.215</b>	<b>.007</b>	
No depression	-2.637	4.999	.027	.072
Mild depression	-.802	1.487	.224	.448
Race/Ethnicity		<b>1.479</b>	<b>.477</b>	
African Americans	-.373	.218	.640	.688
Latinos	-1.000	1.408	.235	.368

**D.14. Predicting Causal Belief that “my symptoms of depression are hereditary” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.163	.072	.789	.850
Income	1.296	3.527	.060	3.655
Age	-1.304	4.892	.027	.272
Education	-1.085	2.661	.103	.338
PHQ		<b>4.980</b>	<b>.083</b>	
No depression	-.354	.222	.638	1.424
Mild depression	-1.421	4.241	.039	4.139
Race/Ethnicity		<b>3.259</b>	<b>.196</b>	
African Americans	-1.669	3.258	.071	.188
Latinos	-1.369	1.953	.162	.254



**D.15. Predicting Causal Belief that “my symptoms of depression are due to a medical illness” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	.546	.878	.349	1.726
Income	-.315	.288	.591	.730
Age	.162	.096	.757	1.176
Education	.955	2.711	.100	2.598
PHQ		<b>1.796</b>	<b>.407</b>	
No depression	-.969	1.650	.199	.380
Mild depression	-.770	1.244	.265	.463
Race/Ethnicity		<b>2.899</b>	<b>.235</b>	
African Americans	-.649	.455	.500	.523
Latinos	-1.407	2.293	.130	.245

**D.16. Predicting Causal Belief that “stress was a major factor in causing my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	.909	2.495	.114	2.482
Income	.555	.835	.361	1.743
Age	.128	.060	.806	1.137
Education	-.440	.535	.464	.644
PHQ		<b>4.572</b>	<b>.102</b>	
No depression	-1.614	4.528	.033	.199
Mild depression	-.978	2.154	.142	.376
Race/Ethnicity		<b>3.814</b>	<b>.149</b>	
African Americans	-1.708	3.759	.053	.181
Latinos	-1.436	2.559	.110	.238

**D.17. Predicting Causal Belief that “other people played a large role in causing my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.365	.406	.524	.694
Income	-.162	.068	.794	.851
Age	.814	2.228	.135	2.256
Education	-1.196	3.559	.059	.303
PHQ		<b>1.686</b>	<b>.430</b>	
No depression	-.978	1.581	.209	.376
Mild depression	-.197	.102	.749	.821
Race/Ethnicity		<b>2.237</b>	<b>.327</b>	
African Americans	-.530	.467	.494	.588
Latinos	-1.192	2.147	.143	.304

**D.18. Predicting Causal Belief that “my symptoms were caused by poor medical care in the past” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-1.099	3.052	.081	.333
Income	.819	1.567	.193	2.199
Age	.788	1.697	.193	2.199
Education	-1.131	2.539	.111	.323
PHQ		<b>1.589</b>	<b>.361</b>	
No depression	-.824	.834	.729	.439
Mild depression	.232	.120	.837	1.261
Race/Ethnicity		<b>4.223</b>	<b>.071</b>	
African Americans	-.750	.857	.355	.472
Latinos	-1.758	4.007	.043	.172

**D.19. Predicting Causal Belief that “my symptoms of depression are a reaction to a medical illness” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.603	1.078	.299	.547
Income	.248	.173	.678	1.279
Age	-.008	.000	.988	.992
Education	.391	.424	.515	1.479
PHQ		<b>3.790</b>	<b>.150</b>	
No depression	-1.176	2.570	.109	.309
Mild depression	-.056	.007	.933	.946
Race/Ethnicity		<b>3.898</b>	<b>.102</b>	
African Americans	-2.248	3.822	.051	.106
Latinos	-1.779	2.354	.125	.169

**D.20. Predicting Causal Belief that “the loss of a significant relationship caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.706	7.095	.295	.494
Income	.988	1.843	.175	2.686
Age	1.709	5.692	.017	5.522
Education	-.766	.979	.323	.465
PHQ		<b>5.971</b>	<b>.050</b>	
No depression	-3.024	5.602	.018	.049
Mild depression	-1.053	2.092	.148	.349
Race/Ethnicity		<b>4.047</b>	<b>.132</b>	
African Americans	.020	.001	.981	1.020
Latinos	-1.569	2.844	.092	.208

**D.21. Predicting Causal Belief that “my negative thinking caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.175	.074	.786	.839
Income	.051	.006	.939	1.052
Age	1.398	5.133	.023	4.047
Education	-.083	.016	.901	.921
PHQ		<b>1.055</b>	<b>.590</b>	
No depression	-.930	1.053	.305	.394
Mild depression	-.351	.264	.608	.704
Race/Ethnicity		<b>5.680</b>	<b>.050</b>	
African Americans	-2.160	5.680	.017	.115
Latinos	-1.155	1.927	.165	.315

**D.22. Predicting Causal Belief that “family problems or worries caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.259	.197	.657	.772
Income	.601	.959	.327	1.825
Age	1.153	4.117	.042	3.167
Education	-.733	1.353	.245	.481
PHQ		<b>8.959</b>	<b>.011</b>	
No depression	-2.454	8.816	.003	.086
Mild depression	-1.293	3.737	.053	.275
Race/Ethnicity		<b>2.534</b>	<b>.282</b>	
African Americans	.172	.045	.832	1.187
Latinos	-.864	1.118	.290	.421



**D.23. Predicting Causal Belief that “my personality caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-1.165	2.765	.096	.312
Income	.099	.016	.901	1.104
Age	1.104	2.368	.124	3.016
Education	-.962	1.418	.234	.382
PHQ		<b>4.570</b>	<b>.102</b>	
No depression	-2.476	3.905	.048	.084
Mild depression	-.995	1.897	.168	.370
Race/Ethnicity		<b>2.314</b>	<b>.314</b>	
African Americans	-.332	.142	.706	.718
Latinos	-1.397	2.083	.149	.247

**D.24. Predicting Causal Belief that “my emotional state caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	.200	.106	.744	1.221
Income	1.144	3.170	.075	3.140
Age	1.462	5.469	.019	4.313
Education	.085	.017	.895	1.089
PHQ		<b>12.334</b>	<b>.002</b>	
No depression	-2.970	10.503	.001	.051
Mild depression	-2.394	9.441	.002	.091
Race/Ethnicity		<b>1.840</b>	<b>.399</b>	
African Americans	-1.132	1.521	.217	.323
Latinos	-1.144	1.635	.201	.318

**D.25. Predicting Causal Belief that “my symptoms of depression are due to me getting older” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.478	.613	.434	.620
Income	1.836	7.389	.007	6.274
Age	1.276	5.334	.021	3.581
Education	-.473	.556	.456	.623
PHQ		<b>2.572</b>	<b>.276</b>	
No depression	-.996	1.640	.200	.370
Mild depression	.047	.005	.942	1.048
Race/Ethnicity		<b>1.070</b>	<b>.586</b>	
African Americans	-.875	1.070	.301	.417
Latinos	-.668	.570	.450	.513

**D.26. Predicting Causal Belief that “my symptoms of depression are due to smoking” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

<b>Predictor</b>	<b>B</b>	<b>Wald (<math>X^2</math>)</b>	<b><i>p</i></b>	<b>Odds Ratio</b>
Gender	-.804	1.021	.312	.447
Income	-.226	.063	.801	.798
Age	-.242	.111	.739	.785
Education	-.009	.000	.991	.991
PHQ		<b>1.375</b>	<b>.503</b>	
No depression	-.020	.000	.986	.981
Mild depression	.896	1.005	.316	2.450
Race/Ethnicity		<b>6.388</b>	<b>.041</b>	
African Americans	.413	.232	.630	1.512
Latinos	-2.597	4.054	.044	.075

**D.27. Predicting Causal Belief that “my altered immunity caused my symptoms of depression” across age, gender, Income, Education, PHQ Score, and race/ethnicity (Diabetic Subgroup N=78)**

Predictor	B	Wald ( $X^2$ )	<i>p</i>	Odds Ratio
Gender	-.1.159	4.067	.044	.314
Income	.005	.000	.994	1.005
Age	.241	.189	.664	1.273
Education	.040	.004	.948	1.041
PHQ		<b>3.702</b>	<b>.137</b>	
No depression	-1.401	3.226	.072	.246
Mild depression	-.940	2.195	.138	.391
Race/Ethnicity		<b>1.662</b>	<b>.436</b>	
African Americans	-1.011	1.544	.214	.364
Latinos	-.424	.280	.597	.655

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## VITA

La Tonya Noël was born in Fresno, California on June 4, 1974. Most of La Tonya's formal education was received in Los Angeles County. She returned to her birth place to attend college and received her Bachelor of Arts degree from California State University, Fresno (CSU) in 1998 with a major in psychology. Upon graduation from CSU, Fresno, she worked as a full-time Supervised Visit Coordinator with Comprehensive Youth Services for one year and as a Medical Claims Adjuster with Liberty Mutual for another year. Following these two years, she completed her Master of Arts degree in Clinical Social Work also at CSU, Fresno in 2003. After graduation, she worked for Community Medical Centers of Central California providing psychosocial assessments for patients in acute care hospitals. Ms. Noel began her doctoral studies at The University of Texas at Austin in the fall of 2003. She has focused her studies and her research on health disparities related to race, coping strategies of medically ill patients, multicultural issues, religious beliefs, depression, and the integration of mental health into the primary medical setting. During her years at UT, she enjoyed teaching FIG 001, freshman seminars, and Generalist Social Work Practice. La Tonya also worked several years as the School of Social Works Undergraduate Program Advisor at The University of Texas at Austin. She plans to continue her research in health disparities, as a Assistant Professor at Florida State University.

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